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### THE PRESENT POSITION OF INJECTION METHODS IN THE TREATMENT OF VARICOSE VEINS AND HÆMORRHOIDS.<sup>1</sup>

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#### INTERNAL HÆMORRHOIDS.

THE hæmorrhoids called "internal" occur in the rectum proper. They are covered with insensitive mucous membrane and are due to enlargement of the columns of Morgagni, caused by dilatation of the veins accompanying the terminal branches of the superior hæmorrhoidal artery. External hæmorrhoids occur near the anal margin. They are covered by skin and are sensitive. Skin tags, the

tags at the lower end of anal fissures and thrombosed external hæmorrhoids are all loosely classed as external piles.

Three degrees of internal hæmorrhoids are recognized and form a suitable standard by which to assess the indications for treatment. First degree hæmorrhoids bleed at defæcation, often with considerable force; in their later development, bleeding may occur apart from defæcation. With second degree hæmorrhoids prolapse occurs during defæcation, reduction is spontaneous; later, reduction requires manual assistance. Third degree hæmorrhoids come down on walking, prolonged standing or any extra exertion and, finally, permanent prolapse, which is associated with a mucoid discharge and soiling of the clothing, may take place.

Pain is not a common symptom of uncomplicated piles and is usually due to an associated anal fissure, abscess or to complications such as prolapse, strangulation or inflammation.

<sup>1</sup>Read at a meeting of the New South Wales Branch of the British Medical Association on June 29, 1933.

### Diagnosis.

A history of bright bleeding or prolapse is sufficient for a provisional diagnosis. The anal region should be inspected and a digital examination of the rectum made, any pain noted, and a low carcinoma of the rectum excluded, particularly if there is a history of bleeding associated with diarrhoea or slimy discharge. Internal hæmorrhoids cannot be felt unless thrombosed or fibrosed. If the patient can voluntarily prolapse the piles, he should always be asked to do so. A proctoscopic examination should be made, the piles present examined, and any abnormal features of the interior of the anal canal noted. A general examination of the patient should be made, and any cardiac lesion or abnormal abdominal or gynaecological condition noted. The urine should be examined for sugar. X ray or sigmoidoscopic examination of the colon may sometimes be required to determine the source of the bleeding. These examinations should invariably be made when bleeding persists after all piles have been treated.

### Palliative Treatment.

Minor degrees of piles are usually seen in constipated women who take regular aperients. On examination small vascular piles are seen just above the white line, the anal canal is congested, and there is generally some proctitis present.

Palliative treatment must always be adopted in acutely prolapsed, thrombosed, inflamed or ulcerated internal hæmorrhoids. Operation or injection treatment is strictly contraindicated in these cases.

### Injection Treatment.

Piles suitable for injection are uncomplicated piles of the first and second degrees.

Piles unsuitable for injection are the following: (i) Fibrous or polypoid piles. (ii) Third degree piles; these are frequently partly covered by mucous membrane and partly by skin. (iii) Piles associated with anal fissure, fistula, carcinoma, polypi *et cetera*. (iv) Piles in nervous persons who cannot tolerate a speculum. (v) External piles.

### Solutions Used for Injection.

The commonest solutions used for injection are: (i) Solutions of carbolic acid, 5%, 10%, 15% or 20%, in equal parts of glycerine and water. (ii) Solutions of quinine and urea hydrochloride, 5%, in distilled water. (iii) Sodium morrhuate, 5% and 10% solutions. (iv) Solutions of carbolic acid, 5% to 10%, in almond oil or other vegetable oils (Wesson or arachis).

The best of these is probably the solution of carbolic acid in almond oil; it is non-toxic, is little liable to cause ulceration, and can be injected in sufficient quantity to affect a wide area of tissue. A firm and lasting sclerosis results. Much the same can be said of quinine and urea hydrochloride, but the sclerosis is not so firm and the results are less permanent. Sodium morrhuate appears to be more painful and to be followed more frequently by

recurrence. These solutions should be injected into the upper part of the main pile mass. The solutions of carbolic acid in dilute glycerine are injected in doses of five to fifteen minims into the centre of the piles. More injections are required and there is greater liability to sloughing. The injections are given lower than with the other solutions and are followed by more pain during the after-treatment.

### Technique of Injection.

A good light is essential. Whitcombe's modification of Græme Anderson's syringe, Morley's speculum, two pairs of angled nasal forceps, cotton wool swabs, tincture of iodine, two kidney dishes and lubricant are required. The patient is placed either in the knee-elbow or the left lateral position. The speculum is passed and the pile to be injected is selected; the anal canal is cleaned with cotton wool. The pile is swabbed with tincture of iodine and the injection is made just beyond the main pile mass, about 1.25 to 3.75 centimetres (half to one and a half inches) above the pectinate line. Apart from the discomfort of the speculum, no pain should be felt during the actual injection. The needle must be passed into the submucous space, neither too superficially nor too deeply, and about two to three cubic centimetres of solution should be injected, the resulting swelling being carefully watched and the dose regulated. Care must be taken when injecting the solution anteriorly to avoid the prostate and deep urethra. Prostatic abscess, sloughing of the rectal wall, ulceration and secondary hæmorrhage, urethritis, ischio-rectal abscess, fistula, painful fissures and hæmatomata at the anal margin have all followed incorrect injection. These complications are rare in the hands of the expert, but are common when the method is attempted by those who have little or no experience. The injection should be charted for future reference.

Very little after-care is required. The patient should take no violent exertion, and any piles which prolapse must be replaced. The bowels should be opened daily, preferably by taking an infusion of senna pods, which give a soft, easy motion, and a plunge bath should be taken daily.

From four to six injections are usually required at intervals of from four to fourteen days, one week being a convenient and satisfactory interval. All patients should be reexamined from three to six months later.

Care should be taken not to give a second injection into the firm area of a previous injection, as ulceration is likely to follow.

If the injection has been properly given, no pain will be felt subsequently, but sometimes a slight ache will be noticed.

### Results of Injection.

A thrombosis of the veins and fibrosis of the submucous tissues take place, causing a contraction of the pile and adhesion to the underlying tissues.

After the use of carbolic acid in almond oil this fibrosis can be felt with the finger many months after the injection.

#### *Scope of Injection Treatment.*

About 70% to 80% of patients presenting themselves for treatment are suitable for injection. The technique is not easy; it requires a thorough knowledge of rectal diseases and anatomy and a sound training in the technique of injection to avoid serious errors. The immediate results are excellent; recurrences or the development of new piles, however, may occur and require further injection.

#### *Operative Treatment.*

Operative treatment is indicated in all third degree piles and those complicated with old fissures or fistula.

Whilst the ligature method is suitable in many, most are best treated by an excision operation. In this operation the pile is stripped up along the sub-mucous layer, care being taken to avoid injury to the sphincter; the pile is clamped at its base with an angioclasp, the redundant portion of the pile is excised, and the remaining portion is sewn over the clamp to the skin edge. The clamp is removed and the suture is tightened. Some mucous membrane should be left between the pile masses excised, and care must be taken to see that the skin division is made at the proper level—at the white line. The results of this operation are extremely satisfactory, and if it is properly carried out, no deformity of the anus or any skin tags are left.

#### *VARICOSE VEINS.*

In the cure of varicose veins treatment by injection has had its most conspicuous success and has now replaced operation as the method of choice. A review of 250 patients in a consecutive series showed that 157 were women and 93 were men. The youngest was aged sixteen years and the oldest seventy-six. The age was noted in 223. Three were under twenty, 29 were between twenty and twenty-nine years of age, 44 between thirty and thirty-nine, 78 between forty and forty-nine, 39 between fifty and fifty-nine, 26 between sixty and sixty-nine, and four were seventy or over. Varicose veins occurred in both legs slightly more often than in the right or left leg alone, each leg being affected about equally.

#### *Contraindications to Injection Treatment.*

Almost all varicose veins of the leg are suitable for injection.

Advanced general disease, diabetes, uncompensated heart disease and acute phlebitis contraindicate treatment by operation or injection. Two of the patients in the series had tuberculosis of the lungs, which did not appear to be in any way affected by the injections. Pregnancy is a definite contraindication to the use of quinine. Miscarriage occurred in one patient treated, who was unaware that she was pregnant. One patient was treated with sodium morrhuate with no ill effect on an

early pregnancy. Injections should not be given during late pregnancy, but should be delayed until the child is weaned. Many of the patients had flat foot or rheumatoid arthritis, several had compensated heart disease, others had asthma, high blood pressure (in one case the systolic pressure being about 220 millimetres of mercury), tabes and disseminated sclerosis. A previous phlebitis following child-birth or operation, or from other causes is not definitely a contraindication, and the condition of the leg is often improved in a remarkable manner by obliteration of the veins. Injection in these cases should, however, be begun with care and carried out with caution, and only when it is certain that the local condition is quiescent. Idiosyncrasy to quinine or cod liver oil necessarily contraindicates the use of quinine or sodium morrhuate respectively. In all, 2,714 injections in this series were given without any serious general result. Those complications which did occur are noted below.

#### *Solutions Used for Injection.*

The solutions most commonly used are quinine and urethane, salicylate of soda, sodium morrhuate and, more recently, lithium salicylate. Quinine and urethane is at present the most popular solution; it is safe, no reported death is known following its use, it is self-sterilizing, and the sclerosis is satisfactory. In the 250 cases reviewed, two cases of cinchonism occurred, in one of which it was severe. Both occurred whilst the same batch of ampoules was being used. The whole of the batch was discarded and no further case of this kind occurred. Two patients suffered from an itchy quinine rash. The solution is best used in the form of ampoules of one to two cubic centimetres. The patient's tolerance should be ascertained on the first injection by giving a dose of not more than 0.5 to 1.0 cubic centimetre.

Much attention has been given to sodium morrhuate on account of its lessened liability to cause injection ulcer. After the injection of this solution the vein swells up and hardens in a few minutes, the resulting swelling often being very painful. I have given up its use, except in the case of small veins at those sites where an injection ulcer is likely to follow the use of quinine. This decision was made as the result of some alarming after-effects which in three patients followed within ten minutes of the injection of the drug. In the first the patient became severely shocked and complained of a severe pain in her right shoulder. The second, a man, also was severely shocked and had a severe pain in the head; the third had symptoms of shock only. All recovered within three to six hours without any late effects. I know of two other patients who suffered somewhat similar symptoms, one of whom spent three days in hospital; and others are reported in the journals. It is probable that these symptoms are due to hæmolysis and the fragments and *débris* in the blood becoming arrested in the lung, brain or other



parts. Further, in reference to this solution (*The Lancet*, April 8, 1933), investigation of various makes of sodium morrhuate sold for the treatment of varicose veins disclosed an extraordinary variation in appearance, colour, iodine value and concentration. Very satisfactory results may follow its use, though the incidence of recurrence is undoubtedly higher than after quinine, and in some cases the varicosity of the recurrence is larger than the original. People sensitive to cod liver oil may suffer from a very irritable urticarial rash following its use.

The popularity of salicylate solutions is diminishing and tutocaine requires further clinical trial. The latter has, however, a serious disadvantage in the difficulty of storing it in glass ampoules or containers. Sugar and salt solutions are popular in other parts of the world, but the reported death rate and incidence of pulmonary embolism with their use is much greater than after the use of the solutions mentioned above.

#### Technique of Injection.

The actual technique is not difficult. A syringe, preferably an easy acting, all-glass hypodermic syringe with a wide bore hypodermic needle is all that is required. Spirit should be used both for the sterilization of the skin and syringe. Small bore needles cause difficulty. It is essential that none of the solution should be injected outside the vein or be permitted to leak out after the injection, as this results in a slow-healing injection ulcer or a very painful localized phlebitis. Blood should always be withdrawn into the syringe before the injection is made. Immediately the needle is withdrawn leakage should be prevented by firm pressure, and later the leg must be elevated whilst a firm *crêpe* bandage is applied. Injection should commence from below upwards, the veins of the foot being left until last. Injection of the upper part of a vein before the lower invites recurrence. Spacing the injections too far apart may result in the intervening vein becoming a living test tube full of dark blood. The whole length of the affected vein must be sclerosed. Often, where there is much subcutaneous fat, "hidden veins" are present. These can be found only by careful palpation, and must be sclerosed to effect a satisfactory cure, especially in those patients who have ulcers of the leg. In one particularly difficult case of this nature "Abrodil" was injected and an X ray picture was taken to determine the site and position of these hidden veins. Special precautions are necessary in injecting the veins of the foot and veins passing transversely across the *tendo Achillis*. These veins are very mobile; they move in front of the needle, are relatively small, and may be difficult to enter. They lie beneath the skin with little, if any, subcutaneous tissue present, and the margin of error is small. In these, solutions which are not likely to cause injection ulcers, such as sodium morrhuate, should be used.

#### Special Techniques.

1. *The Full Vein Technique.*—In the full vein technique the injection is given with the patient standing.

2. *The Empty Vein Technique.*—In the empty vein technique the injection is given with the leg elevated and the vein empty.

3. *Injection and Tourniquet.*—In the injection and tourniquet method the band of a blood pressure apparatus is used as a tourniquet. The air is pumped to 140 millimetres of mercury and is allowed to escape as soon as the injection has been given.

4. *Twin Injection.*—The twin injection (Maingot) has been proposed for large veins which are difficult to sclerose. Three cubic centimetres of quinine and urethane and four cubic centimetres of lithium salicylate are injected from two separate syringes simultaneously at a distance of from five to ten centimetres (two to four inches) into the same vein. This method embodies a new principle. The two substances injected are incompatible and when mixed produce a white glutinous precipitate which adheres to the vein wall. The results of this method are likely to be watched with great interest. Twin injections of sodium salicylate and sodium morrhuate are also used (McAusland).

5. *Dickson Wright's Method.*—Dickson Wright's method is for large veins which fail to react. He exposes the vein by a small incision under a local anaesthesia, using a special retractor devised for the purpose, and injects two cubic centimetres of a 5% sodium morrhuate solution into the vein to fix the clot. Two ligatures are passed, the vein is tied and divided. The wound is closed with silkworm gut sutures. The treatment remains ambulatory.

#### The Effects of Injection.

After injection immediate damage to the endothelial wall of the vein occurs, causing a chemical phlebitis and thrombosis, and later the thrombus organizes. The firm fixation of the thrombus to the wall of the vein explains the infrequency of pulmonary embolism. In some cases a new channel lined with endothelium forms in the organizing thrombus and results in recanalization.

The phlebitis is usually localized and extends a short distance above and below the site of injection. An ascending phlebitis may occur, but is not common. The symptoms following an injection are rarely severe. Injection of the quinine solution outside the wall of the vein causes necrosis and, if the skin is involved, sloughing and ulceration occur. Immediately after such an injection an anæmic area appears at the site of injection and the skin becomes insensitive. Whilst the fluid is entering the tissues, a severe burning pain is felt, which should be the signal for the immediate cessation of the injection. The anæmic area changes to grey, later it becomes a black scab and then sloughs. Similar effects may follow leakage through the needle puncture in the wall of the vein. In the treatment of injection ulcers, when the



slough, which is slow to separate, comes away, the area should be powdered with an antiseptic powder, such as aristol, and firmly bandaged. The patient should immerse the leg daily in the bath. Fomentations should not be used, owing to the liability of scalding the anaesthetic skin.

Repetition of the injections is best made in from five to seven days. The effect of quinine does not appear to be cumulative when given at this interval, but rather a tolerance appears to be acquired. If injections are given repeatedly at intervals of four days or less, the time is insufficient for elimination and the patient often feels unwell and out of sorts.

#### The Results of Treatment.

The results of treatment are difficult to assess. Recurrence may be due to recanalization of veins previously injected or to the formation of new varicosities. There is no reason to believe that the injection of varicose veins will predispose to the development of compensatory varicosities. Often, at the conclusion of treatment, careful examination will disclose very small tortuous veins, which it can be predicted will become varicose and later require injection. Undoubtedly incomplete obliteration of the whole length of a varicose vein, especially at the upper end, and also at the sites where communication with the deep veins takes place, predisposes to recurrence.

In assessing the likelihood of cure of any particular patient it is necessary to take into account the site of the veins, the degree of their development when treatment is first commenced, the size of the veins and the age of the patient.

In general, the main saphenous vein in the thigh is the most difficult to sclerose permanently. It is in this region that Dickson, Wright's technique may prove of value. The other sites, in order of difficulty of obtaining permanent sclerosis, are the main saphenous vein on the medial side of the leg, the external saphenous behind the knee, then the veins in front of the medial malleolus and behind the lateral malleolus. The tributary veins of both the internal and the external saphenous systems are easily sclerosed and in most cases give good and permanent results.

The degree of development of the veins at the time of commencement of the treatment is important. This can be assessed numerically by the number of injections required in the first course of treatment. In the 250 cases reviewed, the largest number of injections given to any individual patient was seventy-seven, 55% of the patients received less than ten injections, 25% between ten and twenty injections, 15% received over twenty and less than forty, and 3% to 5% were given over forty injections. The prognosis is good in those who received less than ten; some degree of recurrence can be anticipated either by recanalization or the development of new veins in all patients receiving more than ten injections in any one leg.

Large veins, especially in the main internal saphenous system on the medial aspect of the thigh, just below the knee on the medial aspect of the leg and in the lower third of the leg, may be difficult to sclerose permanently. Large veins running transversely across the mid-thigh or running obliquely across the front of the leg and those sometimes found running transversely across the front of the leg below the patella can usually be sclerosed satisfactorily without much difficulty, but the reaction is somewhat severe and some pigmentation of the skin is common.

The age of the patient at the time of onset of varicosity appears to account for a special variety. In young people varicosities of the same nature as in older persons may occur and need no comment, but there is a special type of varicose veins of the leg, found in about 2% of cases, which invariably appears before the age of twenty, and occurs mainly in the right leg. It is probable that this should be classed as a congenital anomaly of the veins of the leg. In one patient large strawberry marks were present in patches in the skin above the patella and on the leg, and in another the leg was larger than its fellow and two inches longer. In fully developed cases there is extremely large varicosity of the branches of the internal saphenous vein running across the front of the thigh and below the knee, the veins at this site being often as wide as one's thumb. Similar large varicose branches may pass from the main saphenous stem in the lower leg, and there is usually a large venous lake on the medial side of the lower third of the leg. The internal saphenous vein itself is not varicose; it appears as an enormously dilated vessel and can be felt as a hard, thickened cord extending to the saphenous ring. Sclerosis of the tributary and connecting veins is not difficult, but in the main saphenous vein in the thigh or in the lower third of the leg sclerosis is extremely difficult and, if successful, is usually followed by recurrence. A combination of injection and operative treatment is required in these cases, and the whole length of the saphenous vein in the thigh and portions of vein that resist sclerosis in the lower part of the leg often require surgical excision.

Although the treatment of varicose ulcer and eczema have been considered outside the scope of this paper, it is by the sclerosis of the veins associated with these conditions, and especially of the hidden veins, that the most dramatic results are seen.

The method of injection has now definitely replaced operation. Many of the results obtained are ideal, in that complete restoration of the leg is obtained without any scarring or disfigurement. Unless the twin injection technique can be shown to do away with the necessity for operation in those few veins that cannot be permanently sclerosed, operation will probably be adopted in such cases more often than at present, to give the finishing touches to the preliminary treatment by injection.

# THE QUININE-UREA TREATMENT OF HÆMORRHOIDS.<sup>1</sup>

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to Special Clinic for Diseases of Skin and Veins,  
Launceston Public Hospital, Tasmania.*

THE paper that I am submitting to you tonight is the result of a careful analysis and consideration of 915 consecutive injections distributed over 637 treatments in the case of 150 patients. Of these 119 are males and 31 females. The average number of treatments in the males was 4.07 and in the females 4.39.

A follow-up has been possible in practically the whole of the series, and a total of 17 additional treatments in the case of 12 patients has been necessary. This indicates that all but 8% were satisfactorily dealt with at the outset. Of those requiring additional injections, all are in a comfortable condition at the present time.

I have not taken into consideration any of the patients at the hospital clinic, as I find that amongst the out-patients, as soon as a reasonable amelioration of their condition is effected, they simply disappear.

The quinine-urea method of treating hæmorrhoids is not new. My personal interest in it dates from 1919, when I became possessed of Warbasse's "Surgical Treatment". In this book the author outlines and favours comments on the treatment as it is carried out today. It was not, however, until ten years later, in 1929, that I had the privilege of attending Professor Bensaude's clinic at Saint Antony's Hospital, Paris. Professor Bensaude had been working on the method since 1921 and was then approaching his five-hundredth case. The fact that such a noted proctologist and skilful surgeon should be so firm a convert convinced me that the method was sound. In London I had seen injections, chiefly of phenol in carbolic oil, made directly into the pile. At the same time the pioneer work was being done in the injection treatment of varicose veins generally. In the case of varicose veins of the leg, I saw then, as I have seen since, the occasional occurrence of a violent phlebitis breaking all bounds and extending from the site of injection right to the saphenous opening. I saw then, as I have seen since, black sloughing ulcers, varying from the size of a shilling to the full length of a necrosed vein; and I remembered that in 1919 Warbasse had said that the method of injecting phenol into the pile vein was dangerous in that pyæmia and hepatic abscess was an imminent sequel to any sloughing that might occur in the anal canal. Today, after a very large experience of treating varices with sodium salicylate, glucose, sodium morrhuate, and quinine-urethane, I am more convinced than ever that any one of these substances injected into a vein that is beyond the reach

of further control, such as a pile vein, is a most gravely dangerous procedure. I admit that the number of cases in which things go wrong in the leg is small in proportion to the aggregate of injections, but, given the same complications within the bowel, the results would be very grave. In the quinine-urea method there is no such risk. The solution is injected into the submucous tissue surrounding the vein. Precautions are taken that none of the solution enters the vein, and if, as may occur through a faulty injection, a slough takes place, it is invariably small, dry and altogether benign.

The underlying idea of the method is that the varicosity being due to the failure of the fibrous tissue to give sufficient support to the distressed vein, two lines of treatment must be followed: (i) by constitutional and hygienic methods to attack the cause of the distress in the vein, and (ii) by the injection of an innocuous irritant to cause a proliferation, with subsequent contraction or sclerosis of the submucous fibrous tissue in which the vein lies.

By experiment and experience quinine-urea in 5% solution is proved to be the best substance available for this purpose. It is cheap, it is antiseptic, it is analgesic, it is non-toxic in the quantities used.

The double salt may easily be prepared by the action of hydrochloric acid on the gramme-molecular weights of quinine and urea and the requisite amount of water added to give the required dilution. A few drops of chloroform prevent cloudiness in stock solutions. Convenient tablets may now be purchased for preparing small quantities as required.

The armamentarium should be as simple as possible. It is better to have one set of instruments the use of which becomes automatic, than a host of complicated gadgets. I have modified those used by Professor Bensaude in one or two particulars making for greater simplicity. For example, I have removed the handle of the speculum, leaving simply the circular shield. This allows the instrument to be used in any position or rotated without regard to the cleft of the buttocks. The syringe without equal is Jones's varicose vein syringe with a simple tubular extension. The angle at the apex keeps the hand out of the way so that an uninterrupted view of the needle is maintained continuously. The needle must be rustless and not too fine. The length is unimportant, as it is in full view, and the depth of insertion is perfectly controllable. I find a three-quarter inch, gauge 23, very convenient. A concave mirror with a three-volt lamp set in the concavity gives perfect illumination with the minimum of adjustment. The orthodox lithotomy position is very uncomfortable, embarrassing for females, and is quite unnecessary. With the modified speculum the lateral position becomes possible and is quite effective. It requires the minimum derangement of the patient's clothing, is free from discomfort or embarrassment, and gives perfect access to every portion of the pile-bearing area. As it is usually necessary to work alter-

<sup>1</sup>Read at a meeting of the Northern Division of the Tasmanian Branch of the British Medical Association on August 2, 1933.

nately on the right and left side, I have had my table, an ordinary examination couch, altered so that either end may be raised, thus obviating the necessity of pulling the furniture about for a change of side. The patient thus always lies facing the wall and sees nothing of the preparations going on—an important factor in dealing with nervous people. As the insertion of the speculum is certainly the most uncomfortable part of the whole procedure, it is essential to have a well tapered obturator (the type usually provided is quite impossible) and to use plenty of lubricant; vaseline is the best. Quite frequently definite spasm is present; indeed it may be the principal lesion complained of, so that it is necessary to have at hand a second, quite small speculum. This is usually discarded in favour of the standard size as treatment proceeds. At the first session it is very advisable to make a preliminary digital examination. This may save a grave error in diagnosis and at the same time it gives the patient confidence for the subsequent manipulations.

Perhaps it is superfluous to remind you that the axis of the anal canal lies in a line directed to the umbilicus; remembering this makes the speculum enter more easily. I may follow this anatomical detail with another and remind you that the mucocutaneous junction lies opposite the interval between the internal and external sphincters and marks the lower boundary of the pectinate band or pecten. This consists of a submucous zone of elastic connective tissue overlain by smooth transitional epithelium, very sensitive to traction and into which injections are more or less painful. This pectinate band varies from six to twelve millimetres (one-quarter to half an inch) in width, and its upper limit is marked by the papillæ and crypts at the base of the columns of Morgagni. It is in this latter situation, corresponding to the region of the internal sphincter, that most of the injections are given. It is here that the varicosities become prominent, and by restoring their fibrous support at this point the column of contained blood is kept out of the sphere of action of the sphincters, which is the consummation aimed at. It is here, too, that the "anchoring" effects of the injections are most useful in those cases in which prolapse is the dominant factor.

Although, as in other parts of the body, the veins of the anal canal are extremely variable and must be taken as one finds them, it is well to remember that they are placed in general as *venæ comites* to more consistently placed arteries. Of these, on the left side one large artery occupies a true lateral position and gives off a branch to the anterior commissure and two intermediate branches, one anterior and one posterior. On the right side there are two equally large arteries. One is placed anteriorly without important branches, while the posterior one gives off two branches, one to the posterior commissure and one to the true lateral position.

It is further important to remember that the veins of the superior hæmorrhoidal plexus anas-

tomose with those of the inferior hæmorrhoidal plexus in the submucosa of the pectinate band, so that the so-called external piles do not in general derive their pressure from the systemic circulation of this latter group of veins, but are a pathological extension or invasion of the portal blood of the superior hæmorrhoidal plexus. This exposes the error of the statement frequently made, that the submucous injection treatment is not applicable to external piles. Such a statement is quite wrong. External piles show the most dramatic improvement by the relief of pressure when the feeder veins of the superior plexus are treated.

Take one typical case, number 71 of this series:

A cabinet-maker, aged thirty years, had suffered intensely for a week from an engorged external pile, the symptoms coming on suddenly when he was rowing on December 10, 1930. Examination on December 17, 1930, revealed an inflamed hæmatoma-like mass about the size of a hazel nut. The insertion of the speculum caused considerable pain. An injection of three cubic centimetres was given at the pectinate line, immediately proximal to the pile, and a few minims into the submucosa about the pile. The patient left the surgery quite free from discomfort and has remained so ever since.

As a fact, it is rarely the varicosity of the veins of the superior plexus that brings the patients for treatment. So long as the piles remain high, very little inconvenience is caused. It is when the dilatation extends to the anastomosis beneath the pectinate band, or to the veins of the inferior plexus, thus coming within the sphere of action of the external sphincters, that the symptoms become urgent.

A second category, differing fundamentally from this type of solitary external pile, provides the great majority of cases treated. This group includes all degrees of what is virtually a prolapse of the mucosa, the submucosa and the contained vessels. Usually this is a slowly progressive condition. The slack membrane is habitually everted at stool, and for a time returns spontaneously or is replaced by the patient while completing his toilet. The day comes, however, when replacement is neglected or is beyond the patient's skill, and the mass becomes nipped beyond the sphincters. Within a few hours, as much by lymphatic as by venous engorgement, an exquisitely painful mass of oedematous mucocutaneous tissue completely surrounds the anal orifice. The patient is completely incapacitated and the condition is often aggravated by the application of hot fomentations. Beware of hot fomentations in the treatment of piles. The only palliative treatment is cold compresses, or better still, the ice pack. Let me give an illustration:

Case Number 118.—This man was referred to me by a country colleague. He arrived in town on the Sunday and, instead of coming right along, he put himself to bed with hot fomentations. After four days without a moment's respite he sent for me on the Thursday. Examination showed an oedematous mass with a purple centre. Insertion of the speculum was difficult and painful in the extreme. It was one of the few cases in which a general anaesthetic would have been justifiable. Six cubic centimetres of a 5% solution were injected at carefully selected points, and the next day the man was out of bed, comfortable. That was on December 5, 1932. He returned to the country without



further treatment and has had no trouble since. Some relapse is, however, almost certain to occur in the future unless he has more injections.

In such cases as these the correct treatment is to give from four to six weekly treatments at least, each with one or two injections about the radial points, so placed that each succeeding application is as far removed from the preceding as possible. Care must be exercised not to force an injection into an already sclerosed field, or sloughing will occur. If any difficulty is experienced, it is better to select a fresh point or even to postpone the session.

Occasionally it is advisable to give smaller quantities at each treatment, say, one or two cubic centimetres, but as in general a week should elapse between each application, this prolongs the treatment to a wearisome extent. The smaller injections, up to three cubic centimetres, have the advantage that the patient can return to his day's work immediately, but I find that by giving the injections in the evening and sending the patient straight home to bed, the larger injections, up to seven or even ten cubic centimetres, are well tolerated and much time is saved.

After the anæsthetic effect of the injection passes there is a certain feeling of discomfort which can be relieved, if necessary, by 0.6 gramme (ten grains) of aspirin, and in the morning practically normal conditions are established.

It is remarkable how quickly the prolapse diminishes in volume. Usually, after the second treatment, all objective signs have disappeared.

It is in these cases of prolapse that the quinine-urea method is of outstanding value. The immediate cause of the condition being a general laxness of the mucosa, the sclerosing effect of the solution can be used, as it were, to anchor the parts in their proper place as well as to support adequately and to control the dilated veins. The general tone of the anal region is at the same time restored. The impulse to empty the bowel becomes more insistent and regular and the fear of defæcation that is so prominent a feature in those afflicted with prolapse being removed, regular habits are established and the general health of the patient improves to a remarkable degree. The verdict of those treated in this way is so frequently expressed in the words: "I feel ten years younger", that I am convinced that the psychical effect must be commensurate with the physical improvement.

Let me quote Case Number 111:

An elderly orchardist was afflicted with *paralysis agitans*. For twenty years every bowel motion had been accompanied by an extensive prolapse, which for a time he was able to replace himself. For the past twelve years he had to have his wife assist him in the painful business, which was frequently accompanied by most alarming hæmorrhages.

When I saw him on Sunday, October 9, 1932, he had a general dark crimson prolapse with one hæmatomatous mass, the size of a bantam's egg, in the right posterior quadrant. I replaced the mass and injected a double quantity of solution at three points. After treatment I inserted a suppository of bismuth and zinc oxide with 0.015 gramme (one-sixth of a grain) of morphine in

order to inhibit a bowel action the following day. This was followed by "Petrolagar" the next night. The following Sunday I saw him again. The prolapse had been very much less and there had been no bleeding. The same process was repeated and his bowels moved with no prolapse whatever. Thus on the ninth day after presenting himself, with two painless treatments, the misery of twenty years' duration had vanished. Treatment was continued for five weeks, and although nearly a year has elapsed, there has been no indication of recurrence.

Perhaps rivalling in dramatic effects the cure of prolapse, is the effect on the gravely hæmorrhagic types. Year after year the hæmorrhage may have gone on until the condition of the patient becomes so lowered by secondary anæmia that he is a burden to himself and to all about him. After a single successfully placed injection there is no more bleeding and a course of liver extract produces in a week or two a new man.

One of many such may be quoted, Case Number 97 of this series:

A linotype operator for twenty-one years had never passed a week without hæmorrhage. When I saw him he had been fainting at his work. The previous night he had collapsed in a tram car. His colour was ashen and his rectum was filled with blood clot. He had his first injection of five cubic centimetres of 7.5% solution on May 2, 1932, and has not lost one drop of blood since. In all, he had four treatments and is now in perfect health.

It is not always easy to catch the actual bleeding vessel at the first attempt, but always there will be some relief from the first, and at subsequent sessions the cure is completed. These hæmorrhagic cases certainly cause anxiety. The fear that some unforeseen factor may aggravate the condition and endanger the life of the patient still further is ever present, but I submit that any attempt at surgical intervention would be still more hazardous, if, indeed, it could be attempted at all.

In the whole of my series, both in private and in hospital cases, I have been called to see only three patients after treatment, and these three were hæmorrhagic cases. All three had gone to stool while bleeding and had sat straining while the blood poured from them. In one case a colleague packed the rectum for me, while in the other two an enema of cold water followed by a morphine and bismuth suppository was the only treatment required. In all three the injections were continued and a complete cure was effected.

#### The Injection.

It may be of interest in closing to recapitulate the actual operation as on a typical case.

The patient is disposed upon the couch, facing the wall, with legs drawn up and buttocks well to the edge, with the minimum disarrangement of clothing, decently covered by a sheet and with a towel under the hips. No preliminary preparation is necessary, a bowel wash being absolutely contra-indicated. The operator is seated on a low stool in a convenient position, with the light adjusted and all apparatus on a table within easy reach. The lubricated speculum is slowly introduced to its full length. This is the most uncomfortable part of the whole proceeding, and the patient should be

assured of this, encouraged to relax, to breathe quietly, and to be tranquil. Nothing is more disconcerting than a deadly silence on the part of the surgeon, and a quiet, confident commentary on each step is very helpful. When the obturator is withdrawn from the speculum, one is at first surprised at the absence of faeces within the view. It is quite exceptional to find any faeces within three inches of the outlet. Occasionally, however, one does find the reverse, and unless the amount is small and can easily be pressed back with a swab, it is best to postpone the session, giving the reason in a matter-of-fact manner, and taking the opportunity to examine the field carefully as the speculum is withdrawn. The notes taken on these occasions are frequently most helpful in further sittings. If, however, everything is in order, the speculum is slowly withdrawn, with the bevel directed towards the quadrant selected for injection, which will, of course, be on the lower side of the patient. The swollen veins usually come into view just about the base of the columns of Morgagni, and a careful selection is then made of suitable points for the needle.

The next step holds a large part of the secret of success. The selected area is swabbed with tincture of iodine. The sudden lowering of temperature, due to the evaporation of the spirits, causes an immediate contraction of the blood vessels within the submucosa, thus making it a simple matter to perform the injection without entering the vein. By slightly oscillating the syringe, one is able to see that the needle is correctly placed. If one is in doubt, the syringe may be tested to see if blood is withdrawn. The puncture is totally painless and the patient is unaware that it has been done. At this stage, however, he must be told that he will feel a little pressure, and the solution is then slowly injected.

The mucosa should bulge as the solution enters, but must retain its normal pink colour. If the injection is made too superficially, a bleb will form, of a grey tissue paper tint, and unless this is immediately evacuated a slough will surely follow. On the other hand, if the needle penetrates too deeply, the muscle of the bowel will be stretched and cause severe pain, while no good will be done to the hæmorrhoid. It is simply a matter of experience and judgement in selecting the proper site and the correct depth for the injection. A second, dryer swab is then firmly applied to the injected area and the speculum is again slowly withdrawn. It is wise to leave a little solution in the syringe in order to deal with any point requiring attention in the lower part of the canal.

Finally, a suppository of bismuth and zinc oxide is inserted and the session terminates. If the patient is carrying on with his work immediately, three cubic centimetres is the maximum amount to be used, and it is essential that the patient remain recumbent for at least half an hour after the injection. If he is going straight home to bed, larger quantities can be used, and a suppository

containing the addition of 0.015 gramme (one-sixth of a grain) of morphine is quite useful, though seldom necessary.

A careful record is made of the exact point of treatment and, except in special cases, a week is allowed to elapse, and the next injection is given at a spot as remote as possible from the preceding one.

If the case has been of long standing there may remain at the completion of the course sundry skin tags that interfere with the æsthetic and hygienic results. These may easily be clipped off at one or two sittings after the injection of a few minims of local anæsthetic.

#### OBSERVATIONS ON CASES OF RARER FORMS OF ANÆMIA.<sup>1</sup>

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THE investigations of Minot and Murphy, Castle, Witts and Wills into the cause and nature of anæmia have been very fruitful in their results, and also in stimulating a more active study of the whole subject. It has seemed, therefore, that a record of the six cases about to be described might be of some interest, if only for the purpose of discussion.

I wish first of all to thank Dr. McLaughlin for the untiring care which he has given to the various investigations which a proper study of these cases has necessitated.

The first two cases I find hard to classify; but I have called them aplastic, using the term in a descriptive sense only.

##### Primary Megalocytic Anæmia Showing no Reaction to Treatment.

CASE I.—H.A., aged sixty-eight, a painter, was admitted to hospital on August 29, 1931, and died twelve months later. He complained of increasing pallor and weakness for four to five months. There was no sore tongue, numbness, tingling or diarrhoea.

He was said to have had bleeding from a gastric ulcer three years ago, from which he recovered.

On examination the patient was a pale, breathless, old man. His temperature was 36.4° C. (97.5° F.), his pulse rate was 84 and his respirations numbered 20 in the minute. His tongue was white and furred. The liver and spleen were not palpable. The nervous system was normal.

On August 31, 1931, examination of the blood gave the following results:

Erythrocytes, per cubic millimetre .. ..	915,000
Hæmoglobin value .. ..	26%
Colour index .. ..	1.4
Leucocytes, per cubic millimetre .. ..	6,400

Only an occasional reticulocyte was seen. The red cells were only slightly abnormal; they were well coloured. Slight megalocytosis was present. The white cells were in normal relative numbers.

The Van den Bergh test gave no reaction.

A test meal was performed on September 15, 1931. There was no resting juice. The stomach was empty in two

<sup>1</sup> Read at a meeting of the South Australian Branch of the British Medical Association on July 27, 1933.

hours. The specimens were not mucoid. No free hydrochloric acid was found in any specimen. Histamine and phosphate, 0.1 milligramme per ten kilograms of body weight, was given and no free hydrochloric acid was secreted.

On January 4, 1932, the stomach was examined by X rays. Opaque meal skiagraphs revealed no permanent deformity; some irregular peristalsis was present.

Between August 31, 1931, and April 24, 1932, six transfusions of blood were given from the patient's sons.

Treatment consisted in the administration of whole liver, liver extract by mouth, and by injection ("Hepatex"). In addition, arsenic, iron in massive doses, and marmite produced no effect in stimulating blood formation. Reticulocytes were hardly ever seen, never in countable numbers.

The patient's highest blood level was attained on September 21, 1931, as follows:

Erythrocytes, per cubic millimetre	1,800,000
Hæmoglobin value	30%
Colour index	0.8
Leucocytes, per cubic millimetre	7,820

Slight anisocytosis was present and an occasional megalocyte was seen.

The patient returned home on May 6, 1932, and died some weeks later. No autopsy was performed.

The condition was regarded as possibly being aplastic anæmia, but this would have been unusual at his age. There were no purpuric spots at any time.

#### Anæmia of Aplastic Type.

CASE II.—F.B., a male, aged forty-six years, was admitted to hospital on March 31, 1930. He gave a history that he had been well until six months previously. Subsequently breathlessness on exertion occurred with palpitation and giddiness, all increasing. There was no sore tongue, paræsthesia or gastro-intestinal symptoms. Up to that time the patient had had no illness.

On examination he was a pale, middle-aged man. He had a cardiac basal systolic murmur. The spleen and liver were not palpable. No abnormal physical signs were found.

Blood examination on April 1, 1930, revealed the following:

Erythrocytes, per cubic millimetre	905,000
Hæmoglobin value	23%
Colour index	1.37
Leucocytes, per cubic millimetre	3,240

Anisocytosis and megalocytosis were general. There was slight polychromatophilia. No poikilocytosis was present. The anisocytosis and megalocytosis were less than that usually seen in primary pernicious anæmia with equally low hæmoglobin value. The leucocytes were reduced, but their relative numbers were normal.

The Van den Bergh test gave a very slight indirect reaction.

Treatment consisted in the administration of 120 grammes (four ounces) of fresh liver and one phial (240 cubic centimetres or eight ounces) of Burroughs Wellcome extract daily.

On March 31, 1930, the reticulocytes were 11% of the red cells; on April 11, 1930, the percentage was 17.5.

On April 14, 1930, the erythrocytes, the leucocytes, the hæmoglobin value and the film showed practically no change.

On April 27, 1930, a transfusion of 600 cubic centimetres of blood was given.

On May 12, 1930, the daily administration of two phials of "Ventriculin" was started.

On May 30, 1930, the Wassermann test gave a negative reaction.

On July 31, 1930, it was noted that he had had three transfusions; the last (960 cubic centimetres or 32 ounces of whole blood) had been given on July 20, 1930. Otherwise treatment had continued with "Ventriculin" and fresh liver.

Blood examination revealed the following:

Erythrocytes, per cubic millimetre	5,065,000
Hæmoglobin value	66%
Colour index	0.65
Leucocytes, per cubic millimetre	3,050

Anisocytosis was present; some megalocytes were seen; there was some polychromatophilia. The polymorphonuclear cells were relatively reduced.

A test meal was performed on August 7, 1930; hydrochloric acid was present in normal concentration.

On September 15, 1930, the patient left hospital at his own request. The blood had deteriorated on September 6, 1930:

Erythrocytes, per cubic millimetre	2,300,000
Hæmoglobin value	45%
Colour index	0.94

On October 4, 1932, the patient's nose bled for four hours and he was readmitted to hospital as an emergency. The hæmoglobin value was about 10%.

A blood transfusion of 600 cubic centimetres was given immediately and an intramuscular injection of "Campolon" was ordered, one ampoule daily.

On October 8, 1932, the hæmoglobin value was 14%; the reticulocytes were 9.5% of the red cells. The Van den Bergh test gave no reaction. No urobilinogen was present in the urine.

On October 20, 1932, a blood transfusion was given. (The amount is not stated; it was probably 600 cubic centimetres.)

On October 24, 1932, blood examination revealed the following information:

Erythrocytes, per cubic millimetre	1,350,000
Hæmoglobin value	28%
Colour index	1.04
Leucocytes, per cubic millimetre	5,000

The film had the same appearance as was found in former examinations. The nuclei of the polymorphonuclear cells were not of a very mature type.

On October 28, 1932, the hæmoglobin value was 23%; on November 7, 1932, it was 25%.

On November 11, 1932, the red cell fragility test gave a normal result.

On November 19, 1932, the hæmoglobin value was 15%; the reticulocytes were 2% of the red cells. There was no change in the film.

The differential leucocyte count was as follows:

Polymorphonuclear cells	14%
Lymphocytes	82%
Monocytes	4%

The polymorphonuclear cells were of an immature type (only two or three lobules to the nuclei).

On November 21, 1932, a blood transfusion was given. The leucocytes numbered 2,250 per cubic millimetre.

On November 23, 1932, the urobilinogen test gave a normal result. The Van den Bergh test gave no reaction.

On December 1, 1932, the findings on blood examination were:

Erythrocytes, per cubic millimetre	1,350,000
Hæmoglobin value	25%
Colour index	0.9
Leucocytes, per cubic millimetre	3,000

The film was unchanged; some punctate basophilia was present.

On December 10, 1932, the findings on blood examination were:

Erythrocytes, per cubic millimetre	1,050,000
Hæmoglobin value	20%
Colour index	0.96
Leucocytes, per cubic millimetre	2,750

In spite of treatment by four blood transfusions, by "Campolon" and by adrenaline, his blood never reacted. The patient died in January, 1933, at home. No autopsy was performed.

#### Comment on Cases I and II.

It is very difficult to classify Cases I and II, or even to say that they belong to the same group. The patient mentioned in Case I never showed the



slightest response to any form of treatment except transfusion. His blood-forming mechanism did not react. He produced no reticulocytes and gave no reaction to the Van den Bergh test, indicating that no undue hæmolytic was present. The gastric juice contained no free hydrochloric acid, even after stimulation with histamine. So we may regard this case as one of aplastic anæmia, though it certainly does not belong to the ordinary group found in young people.

In Case II the patient had a long illness characterized by a fatal relapse or exacerbation of his anæmia, apparently initiated by severe epistaxis. (Compare the hæmatemesis in Case I.) The patient's hydrochloric acid was in normal concentration, and he had no evidence of severe hæmolytic. Although he showed some early reticulocytosis in response to liver treatment, this was not repeated to the same extent after his second admission to hospital, and we were unable by any means to stimulate blood formation.

#### Macrocytic Hæmolytic Anæmia.

CASE III.—L.S., a female patient, married, aged sixty-seven years, gave a history of having been pale for about four months. She had been always healthy previously. She was very weak and nauseated for four or five weeks.

On examination her temperature was 38.4° C. (101.2° F.), the pulse rate was 104 and the respiration rate 28 in the minute. (The pyrexia persisted throughout the illness.) The patient was pale and slightly jaundiced. A blowing apical systolic murmur was present. Scattered moist râles were heard at the pulmonary bases. The liver was palpable 2.5 centimetres (one inch) below the costal margin. The spleen was palpable. The urine contained urobilinogen ("++").

The blood was examined on June 29, 1932, with the following result:

Erythrocytes, per cubic millimetre . . .	975,000
Hæmoglobin value . . . . .	19%
Colour index . . . . .	0.97
Leucocytes, per cubic millimetre . . . .	30,800

The reticulocytes were 20% of the red cells. Of the nucleated cells 5% were nucleated red cells. In the film many megalocytes were seen, but there was no general megalocytosis. Considerable polychromatophilia was present.

On June 29, 1932, the red cell fragility was tested. Hæmolytic began in a 0.58% aqueous solution of sodium chloride (the normal point is 0.43% to 0.42%). Hæmolytic was complete in a 0.36% solution (the normal point is 0.35% to 0.32%). This means that a high proportion of the cells had increased fragility.

On June 29, 1932, the Van den Bergh test gave a direct positive, with a tendency to a biphasic reaction. On July 8, 1932, a test for occult blood failed to reveal any in the feces. On July 13, 1932, a test meal was given; the hydrochloric acid in one and a half hours was 0.146%.

Liver treatment was begun and a transfusion of 660 cubic centimetres (twenty-two ounces) of citrated blood was given on June 29, 1932. The hæmoglobin value rose afterwards, on July 1, 1932, to 50%. But the improvement was not maintained. The temperature at night varied from 37.5° to 38.3° C. (99.6° to 101° F.).

After a fourth transfusion of 600 cubic centimetres (twenty ounces) of blood from a donor of suitable type on July 29, 1932, the patient became intensely jaundiced. The urine gave a positive result to a urobilinogen test and contained bile, but no hæmoglobin. The jaundice gradually diminished, but the patient sank and died on August 9, 1932.

At autopsy the relevant observations were as follows. The gall-bladder and ducts were distended with thick black bile, but no obstruction could be demonstrated.

The liver weighed 1,344 grammes (forty-seven and a half ounces). Fine cirrhosis was present, and the Prussian blue reaction for hæmosiderin was obtained. This reaction was present also in the pancreatic and splenic tissues. The microscopic study of the liver by Professor J. B. Cleland showed evidence of obstructive jaundice, though in one place this appearance was not present. (This was possibly due to hæmolytic and increased viscosity of bile.)

Myelocytes and myeloblasts were noted in hepatic capillaries and in Glisson's capsule in larger vessels.

Examination of spleen revealed an extensive infarct. Bilirubin crystals were seen with fibrosis. No other evidence of increased blood destruction was seen. The spleen weighed 424 grammes (fifteen ounces).

Case III is an example of acquired hæmolytic anæmia. A good account of this condition is to be found in *The Quarterly Journal of Medicine*, October, 1932, page 543. Here L. S. P. Davidson records several cases. He divides them into two groups:

1. Those with a known causal condition, for example: (i) Hodgkin's disease, three cases; (ii) lead poisoning, one case.

2. Those with an unknown causal factor.

In the latter group he found that in two the microscopic appearance of the spleen resembled that found in pernicious anæmia, while in the remaining three it was similar to that found in acholuric jaundice.

Witts records cases of this disease in patients who recovered after one or more blood transfusions.

Davidson treated his primary idiopathic cases by transfusion and splenectomy. In two instances recovery followed splenectomy.

In our case the patient became intensely jaundiced after transfusion. This is hard to explain, but it may be that the added blood increased the rate of blood destruction and that the bile was rendered too viscid to pass the bile capillaries. There was no obstruction in the larger ducts.

The increased fragility of the red cells may be noted, but it is not invariably present in hæmolytic anæmia, and in any case cannot be the whole explanation of hæmolytic. The high reticulocyte count is invariably found in macrocytic hæmolytic anæmia.

The pyrexia may be due to rapid blood destruction. In Addisonian anæmia and in leucæmia pyrexia is often present and frequently persistent during periods of rapid blood deterioration.

#### Megalocytic Anæmia of Pregnancy.

CASE IV.—J.A., aged thirty-five years, was a woman who had had seven children. She was admitted to hospital on August 9, 1931.

She gave a history of having been delivered of an eight months child two weeks before admission. She had a normal confinement. Loss of blood was not excessive. She had been pale and weak for the last three weeks. She could not "bear the sight of food". She had diarrhoea for the last twenty-four hours before admission to hospital.

On examination her temperature was normal, her pulse rate was 118 and her respiration rate 24. Her tongue was not atrophic.

No abnormal physical signs were present, except extreme pallor.

On August 11, 1931, examination of the blood revealed the following:

Erythrocytes, per cubic millimetre	765,000
Hæmoglobin value	18%
Colour index	1.17
Leucocytes, per cubic millimetre	6,200

Anisocytosis was present. Many megalocytes were seen, but there was no general megalocytosis. Poikilocytosis was present. The leucocytes were present in normal relative numbers. The blood belonged to Group II.

Treatment was started with one dose of liver extract (Burroughs Wellcome and Company). Subsequently marmite, four grammes (sixty grains), was given three times a day. Cod liver oil was given in doses of eight cubic centimetres (four fluid drachms) thrice daily, and lemon juice (one lemon daily).

On August 14, 1931, the reticulocytes were 4%. A transfusion of 660 cubic centimetres (twenty-two ounces) of blood with 120 cubic centimetres (four ounces) of citrate solution was given.

On September 17, 1931, the reticulocytes were 23%.

On August 21, 1931, the erythrocytes numbered 2,250,000 per cubic millimetre and the hæmoglobin value was 47%.

On August 25, 1931, a test meal revealed no free hydrochloric acid.

On September 3, 1931, the erythrocytes numbered 3,340,000 per cubic millimetre and the hæmoglobin value was 73%. In the film the red cells were almost normal in appearance.

On October 1, 1931, the patient was discharged from hospital with a hæmoglobin value of 75%.

CASE V.—E.N., aged twenty-eight years, was a woman who had had three children. She was admitted to hospital on December 22, 1932. She had had a normal confinement eleven days previously. She said she had been well during her pregnancy.

The findings on blood examination were:

Erythrocytes, per cubic millimetre	1,500,000
Hæmoglobin value	33%
Leucocytes, per cubic millimetre	13,000

Anisocytosis, general megalocytosis and much polychromatophilia were present. There was a slight relative increase in polymorphonuclear cells.

The Van den Bergh test gave no reaction.

On January 16, 1933, a test meal was given. Mucus was not excessive. Hydrochloric acid was found in one specimen only (two hours). One-tenth normal sodium hydrate equivalent was 7.

An injection of histamine produced hydrochloric acid in low concentration, the maximum appearing at twenty minutes being 0.127%.

The treatment consisted of one injection into the thigh muscle of 2.0 cubic centimetres of "Campolon" on December 28, 1932. Subsequently iron and quinine citrate was given in doses of 0.3 gramme (five grains) three times a day. Marmite, four grammes (one drachm), was given three times a day.

On February 16, 1933, the blood examination findings were:

Erythrocytes, per cubic millimetre	4,890,000
Hæmoglobin value	75%
Colour index	0.76

Anisocytosis was present and pallor of the red cells was evident.

In *The Lancet* of June 4, 1932, Strauss and Castle record observations on the anaemia of pregnancy. They found that in a group of pregnant women more than 50% showed a great decrease or absence of hydrochloric acid in the gastric juice. This group showed an average loss of 12% hæmoglobin.

Thirty-five women with less than 45% hæmoglobin at the latter half of pregnancy showed absence of hydrochloric acid or only a trace. Of this group, two-thirds had a diet deficient in iron.

Thirty of the thirty-five had anaemia of the hypochromic type. These were not improved by liver, but showed rapid improvement with large doses of iron.

It is thought that the hæmoglobin requirements of the fetus really occasion a blood loss to the mother which she is unable to make good on account of her disturbed gastric secretion and deficient iron intake.

Five cases were of the hyperchromic type (primary pernicious anaemia of pregnancy). Two patients were cured by iron, two by liver. Beef-steak with gastric juice also effected a cure.

Castle and Strauss conclude that in some, pregnancy causes a temporary loss of the "intrinsic" factor. After pregnancy this is usually restored.

That an "extrinsic" factor is present in muscle tissue was shown by Castle's now classic experiment.

A form of anaemia found in India and elsewhere, tropical macrocytic anaemia, is due apparently to the absence from the diet of this "extrinsic" factor.

As tropical macrocytic anaemia is curable by marmite, an investigation was carried out to ascertain whether any of the known vitamins which marmite contains was the factor in question. It was proved not to be so, but an unknown substance, heat-resistant and alcohol-soluble, cures the anaemia. (See accompanying table.)

TABLE I.  
Dr. Lucy Wills's Investigation, Communicated by Dr. Chick,  
of the Lister Institute.

Substance.	Contained Vitamins.	Effect on Macrocytic Tropical Anaemia, Bombay (L. Wills).
Marmite (autolyzed yeast)	B <sub>1</sub> + B <sub>2</sub>	++
Marmite, autoclaved	B <sub>2</sub>	+++
Yeast	B <sub>1</sub> + B <sub>2</sub>	Less active than marmite weight for weight
Yeast extract, watery, boiled to precipitate proteins, pH 5.7	B <sub>1</sub> + B <sub>2</sub>	Less active than yeast
Yeast, autoclaved, alkaline solution	0	+ in large doses
Jansen's acid clay adsorbate from rice polishings	B <sub>1</sub>	0
Egg white concentrate (protein free)	B <sub>2</sub>	0

The most active curative agent is autoclaved marmite. The only known vitamin which this contains is B<sub>2</sub>. B<sub>2</sub> (egg white concentrate) is inert. Therefore the curative agent in autoclaved marmite is not B<sub>2</sub> or any known vitamin.

Strauss and Castle cured Addisonian anaemia with marmite and gastric juice with the same technique which they adopted in using beef muscle and gastric juice.

In our two cases we note: (i) the absence or great diminution of hydrochloric acid, (ii) the rapid recovery of the blood.

In one case a transfusion was given; in the other an injection of liver extract ("Campolon"), followed by marmite and marmite and iron respectively.

#### Pernicious Anaemia with Normal Hydrochloric Acid Secretion in Gastric Juice.

CASE VI.—D.L., aged seventy years, a male, was admitted to hospital on March 6, 1929. He gave a history that he had been ill for eight months following dysentery lasting for two months. He complained of weakness, anorexia, sore mouth and tongue.

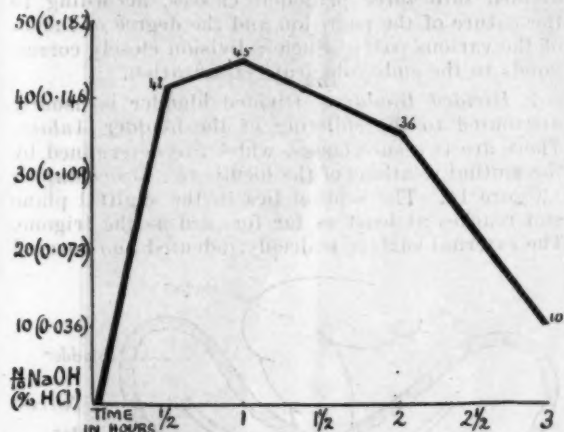
On examination his temperature was 37° C. (98.6° F.), his pulse rate was 80 and his respiration rate 20.

He had a glazed tongue, oedema of the ankles and a "lumbar pad". No abnormality was found on examination of the central nervous system.

On March 8, 1929, the blood examination revealed:

Erythrocytes, per cubic millimetre ..	1,100,000
Hæmoglobin value .. .. .	33%
Leucocytes, per cubic millimetre .. ..	7,320

General megalocytosis, anisocytosis, poikilocytosis and polychromatophilia were present in the film. The leucocytes were present in normal relative numbers. The Van den Bergh test gave a weak indirect reaction. The results of the test meal are shown in the accompanying chart.



This patient responded at once to liver feeding (eight ounces of cooked liver daily). By March 22, 1929, the reticulocytes had risen to 20%. On April 19, 1929, the hæmoglobin value was 70% and the erythrocytes numbered 3,400,000 per cubic millimetre. On May 16, 1929, the hæmoglobin value was 83%, and the erythrocytes numbered 3,105,000 per cubic millimetre.

Addisonian anaemia in a patient who showed a normal hydrochloric acid curve in the gastric juice and whose anaemia was cured by liver extract, is very rare, although several cases are on record.

In the vast majority of cases of primary pernicious anaemia complete achylia is found, and hydrochloric acid secretion cannot be stimulated by histamine. But a case such as this shows that the "intrinsic" factor of Castle is secreted or not secreted independently of hydrochloric acid.

#### CONGENITAL MULTILOCULAR BLADDER.

By COLIN EDWARDS, M.B., Ch.M. (Sydney).

Honorary Urologist, Lidcombe State Hospital and New South Wales Masonic Hospital; Honorary Assistant Urologist, Royal North Shore Hospital of Sydney.

CONGENITAL malformations of the urinary tract are of common occurrence and of varying clinical significance. Their frequency is probably determined by the complex origin and development of this system, the successful evolution of which demands a minimum of variation from normal and

an extraordinary degree of synchronization. In general terms, the clinical importance of any individual case depends primarily on the degree of obstruction to the urinary tract.

As one might anticipate on embryological grounds, the ureters are most often the site of congenital abnormalities, while the bladder is the most rarely affected of the urinary organs.

#### Incidence.

At the present time it appears that about twenty cases of true multilocular bladder are on record. This figure suggests an extreme degree of rarity, which is probably more apparent than real. Cases may escape detection in various ways. Many are not compatible with life, and it is uncommon for necropsies to be performed on still-born infants or on those which are moribund at birth. Again, fatal cases of infantile hydronephrosis or hydroureter are not infrequently reported without a complete statement of the aetiology. Possibly a thorough examination of the whole urinary tract would disclose a higher incidence of vesical and urethral abnormalities.

#### Classification.

Prior to the recognition of vesical diverticula as a separate entity, many such cases were described as multilocular bladders. Cathelin and Sempé (1903) attempted a classification of the cases then recorded, but it has since been shown that none of the standards which they used to differentiate these two conditions is infallible. Even at the present time it seems impossible to enunciate criteria which are applicable to all cases, but the following points are suggested as being helpful in the classification of individual specimens.

1. A diverticulum invariably has an opening into the bladder, and this orifice is usually small. In multilocular bladder such a communication may be of any size or entirely absent.

2. A diverticulum rarely has a ureter opening into it, but (except in the "hour-glass" type) each loculus usually has at least one ureter.

3. Bladder loculi usually have a muscular coat, the exceptions being in those due to imperforate ureter and where atrophy has resulted from chronic over-distension. This feature is usually wanting in the walls of a diverticulum.

4. Some double bladders have a duplicated urethra, each loculus then having its own opening on the surface of the body. Diverticula never open independently on the surface by a natural channel.

The only other condition which appears to have been confused with multilocular bladder is that of extravescical dilatation of the terminal portion of the ureter. Externally there is some resemblance between the two, but an examination of the interior makes the differentiation obvious.

#### Embryology.

A brief survey of the essential embryology is required for consideration of the aetiology.



In the four millimetre embryo the primitive hind-gut, the mesonephric duct, the allantois and the tail-gut all open into the cloaca. About the age of four or five weeks (five millimetres) the rectum gradually becomes cut off dorsally by the growth of the uro-rectal septum. This commences from the region between the openings of the hind-gut and the allantois, and continues till it meets the cloacal membrane; that is, it is a transverse membrane penetrating cranio-caudally. The cloacal membrane is thus divided into a cranial uro-genital membrane and a caudal anal membrane, both of which perforate about the seventh week, leaving the intervening tissue to form the perineum.

When the embryo is about eleven millimetres in length, the ventral cloaca becomes divided into a cranial uro-genital sinus and a caudal vesico-urethral portion, by a constriction which gradually deepens up to the sixteen millimetre stage. Subsequently the muscular layer is developed in adjacent mesenchyme. The bladder and urethra become distinct by excessive cranial growth of the vesico-urethral primordium, the urethral portion remaining narrow. The bladder ultimately reaches the umbilicus, in which region the allantoic remnant remains open into its cranial end. Definitively the apex of the bladder is connected with the ventral body wall by an epithelial cord—the urachus.

The ureters are primitively developed as buds from the mesonephric ducts. The bud first appears in the five millimetre embryo and in the growth of the vesico-urethral portion of the ventral cloaca part of the wall of the mesonephric duct becomes absorbed into the vesico-urethral wall. Thus the ureter, which commenced as a solid tube of cells and subsequently became canalized, now opens into the posterior bladder wall, and the mesonephric duct is implanted into the urethra.

#### Ætiology.

All cases of multilocular bladder cannot be attributed to a common fault in development. In some instances there appears to be a more or less complete division of the bladder *Anlage* during an early period of development. When other organs of cloacal origin are found to be duplicated, this is certainly the most probable explanation.

A second variety has been attributed to excessive constriction between the uro-genital and vesico-urethral portions of the ventral cloaca. The fact that, in most of these cases, the ureters open above the constriction supports this view, as the trigonal area properly belongs to the caudal vesico-urethral portion.

On other occasions it appears that the ureter has failed to perforate the mucosa and submucosa of the bladder wall, although the remainder of the tube is patent and it passes through the muscularis. The absence of muscle fibres in the interocular septum is in favour of this interpretation, as the bladder musculature appears at a later stage of development than the union of bladder and ureter.

In such a case the second loculus is really a cystic dilatation of the lower end of the ureter occurring within the bladder cavity. The cyst may subsequently perforate, in which case there is a communication between the two cavities, but, failing such a perforation, the cyst remains isolated from the body surface.

#### Varieties.

Most multilocular bladders are double, but in some examples a small loculus is intercalated in the walls of the main cavities. They may be broadly divided into three principal classes, according to the nature of the partition and the degree of fusion of the various parts. Such a division closely corresponds to the embryological classification.

1. *Divided Bladder*.—Divided bladder is usually attributed to the splitting of the bladder *Anlage*. There are two sub-classes, which are determined by the mutual relations of the loculi: (a) *Vesica duplex* (Figure I). The septum lies in the sagittal plane and reaches at least as far forward as the trigone. The external surface is deeply indented and covered

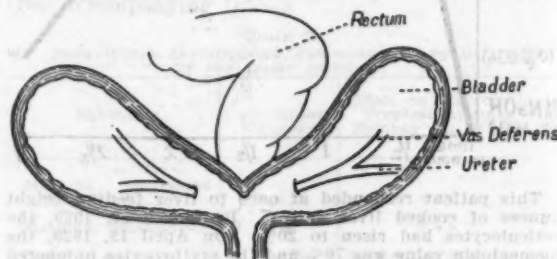


FIGURE I.  
*Vesica duplex*, Chonky's case (after Young).

with peritoneum between the two parts, and in this space the rectum may pass downwards. Each loculus has at least one ureter. Duplication of other organs of cloacal origin is generally present. At least four of the seven recorded cases which may be placed in this category were in infants and resulted in early death. (b) *Vesica bipartita* (Figure II). In *vesica bipartita* the septum lies wholly within the boundaries of the bladder cavity and little, if any, depression marks the limits of each part on the external surface. The septum may be complete or incomplete; it is rarely in the midline, although it may lie in an antero-posterior, frontal or horizontal plane. Several loculi may be present. Duplication of the other genito-urinary organs is usual. Most of this group of nine cases were found in infants or young children, but Thomson Walker mentions two patients, aged thirty-four and fifty years, who probably belong to this class.

2. *Hour-Glass Bladder*.—Hour-glass bladder (Figure III) is the name most appropriately applied to the cases caused by inordinate constriction between the two portions of the ventral cloaca. Of the four cases collected, all had a circular constriction between the upper and lower loculi; three

ILLUSTRATIONS TO THE ARTICLE BY DR. T. G. HEWITT.



FIGURE I.  
Showing calculus in thigh.



FIGURE II.  
Showing normal gall-bladder in relation to opaque cast of renal pelvis and calyces.

ILLUSTRATIONS TO THE ARTICLE BY DR. J. HOETS.



FIGURE I (Case I).  
The lunate is seen to be more dense than the other carpal bones.



FIGURE II.  
Shows the navicular flattened and sclerosed as compared with the other side (uninjured), Figure III.



FIGURE III.

ILLUSTRATION TO THE ARTICLE BY DR. DAVID ZACHARIN.



Hysterosalpingogram showing: (A) filling of bicornuate uterus, (B) utero-ovarian venous plexus, and (C) ovarian veins.

ILLUSTRATION TO THE ARTICLE BY  
DR. JAMES O'DONNELL.



FIGURE VI.  
Skilogram of hand in Case II.

ILLUSTRATION TO THE ARTICLE BY  
DR. H. A. MCCOY.

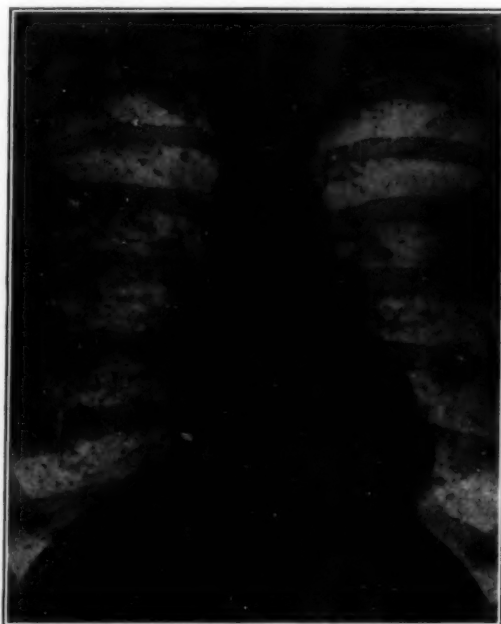


FIGURE I.



had both ureters opening into the upper chamber, one having a ureteric orifice in each part. All had urinary symptoms dating at least from late adolescence, but the ages and causes of death are of interest. Detwiler's patient, a man aged sixty-nine

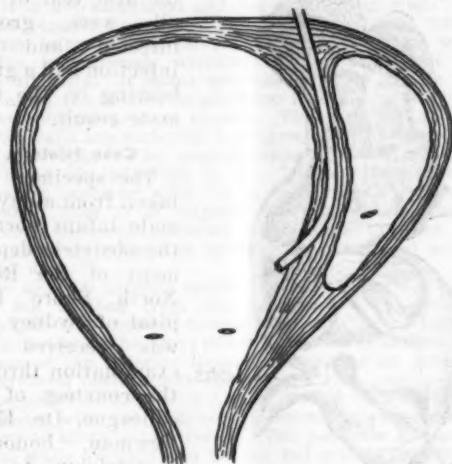


FIGURE II.  
*Vesica bipartita*, Juetting's case (after Young).

years, died from exhaustion due to sepsis; Cutler's patient was a boy of eleven who died of peritonitis due to the intraperitoneal perforation of an ulcer of the upper loculus. The first of Fuller's patients, a man of fifty-five, recovered after division of the

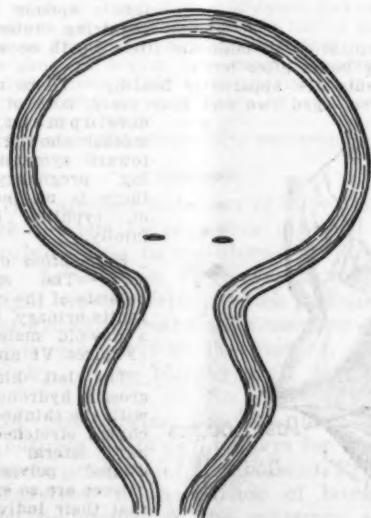


FIGURE III.  
Hour-glass bladder, Fuller's case (after Young).

constriction; the second died after several operations for drainage and the removal of a vesical calculus at forty-four years.

3. *Intravesical Ureteral Cyst* (Figure IV).—In the literature only one case has been found in which

an imperforate ureter formed an intravesical loculus (Mézan). This was in a child, aged three and a half years, with an incomplete horizontal septum of the bladder and an intercalated loculus in the posterior wall without any surface opening. One ureter opened into the intramural cyst and

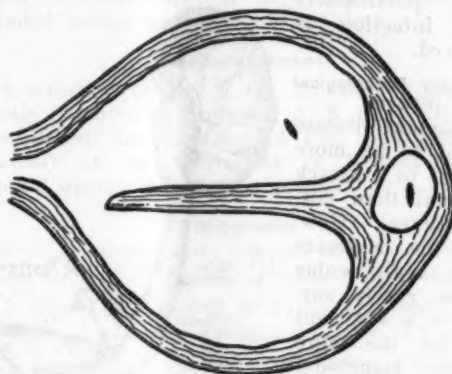


FIGURE IV.  
*Vesica tripartita* and imperforate ureter (after Mézan).

the other into the upper cavity of the bladder. The child died after an operation for drainage.

The author's case has been included in this group (Figures V, VI and VII).

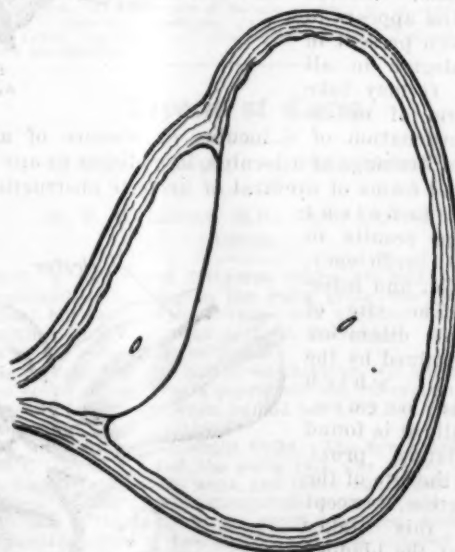


FIGURE V.  
Imperforate ureter, author's case.

#### Clinical Significance.

Multilocular bladder is a condition which is frequently incompatible with life, and its interest is therefore rather academic than clinical. However, patients have survived well into the sixth decade with this complaint, and a diagnosis has been made clinically in the course of a routine

investigation for pyuria or retention of urine. In the fatal cases the termination appears to have been due, directly or indirectly, to the urinary system. This malformation has an extremely high mortality, particularly when infection is advanced.

#### Secondary Pathological Effects.

Malignant disease is said to be more prone to attack abnormal than normal organs. However, the sufferers from multilocular bladder rarely survive for a sufficient time for the more common manifestations of malignant growths to occur, and there is no record of coincidental vesical cancer.

Obstruction to the free exit of urine is the most serious effect and appears to have been present in some degree in all cases. It may take the form of incomplete evacuation of a loculus or absence of any external drainage of a loculus, in addition to any of the usual forms of urethral or ureteric obstruction.

This deficient drainage results in renal inefficiency, dilatation and infection. The site of maximal dilatation is determined by the point at which stenosis occurs. Generally it is found immediately proximal to the site of the obstruction, except when this takes place at the bladder neck. In such a case the bladder may achieve first a degree of hypertrophy comparable to that found in adult urethral strictures of small calibre. Excessive intravesical pressure during attempts to void urine eventually undermines the efficiency of the ureteric valvular mechanism and

produces dilatation of the less muscular ureter.

Infection plays an important part after urinary stagnation has occurred. Of the cases for which details are available and which survived the first year of life, all were grossly infected and the infection had a grave bearing on the ultimate result.

#### Case History.

The specimen was taken from a day-old male infant born in the obstetric department of the Royal North Shore Hospital of Sydney. It was received for examination through the courtesy of my colleague, Dr. E. L. Newman, honorary obstetrician to the Hospital.

The child was delivered at a normal confinement. At birth it was blue and showed little tendency to spontaneous respiration. It was resuscitated and developed a good colour, but tended to relapse into apnoeic coma, requiring intermittent

artificial respiration to maintain life. Death occurred in coma twenty hours after birth.

Both parents are apparently healthy. There are two other children, aged two and four years, both of normal development. The mother showed no untoward symptoms during pregnancy, and there is no indication of syphilis in the family.

**Description of Specimen.**—The specimen consists of the complete genito-urinary tract of a day-old male infant (Figures VI and VII).

The left kidney is grossly hydronephrotic, with the thinned parenchyma stretched above and lateral to the dilated pelvis. The calyces are so expanded that their individuality is lost in the pelvis. There are numerous retention cysts in the parenchyma.

The left ureter shows an extraordinary degree of dilatation, sacculation and tortuosity. In spite of this, it was demonstrated to be patent before section by the injection of coloured fluid which entered the posterior loculus of the bladder. Its maximum transverse diameter is four

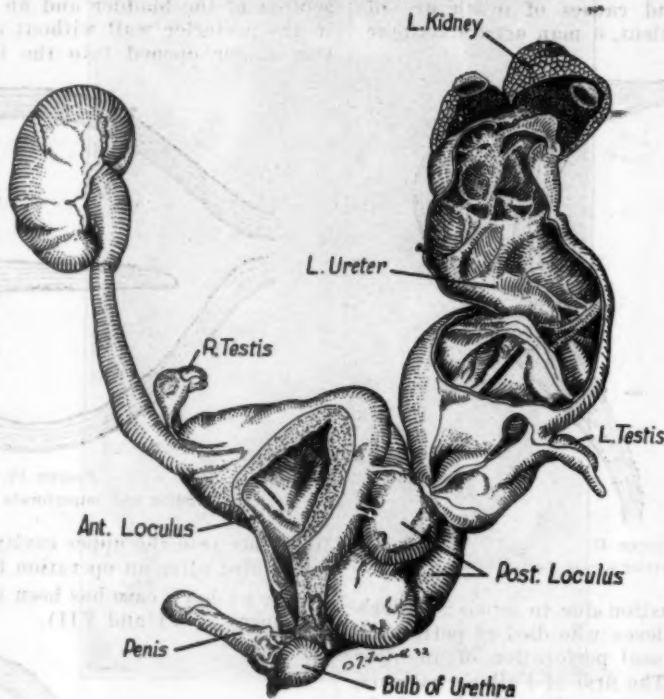


FIGURE VI.  
Anterior view.

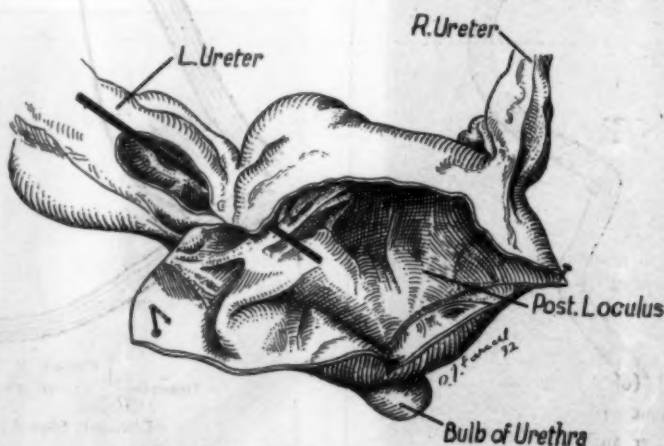


FIGURE VII.  
Posterior view.

centimetres. The walls are fibrous, but microscopically they are not entirely devoid of muscle fibres. They are so thin that in most of their extent they are translucent.

The right kidney shows the same changes as the left, but in a much less degree. It has the appearance of having retained a moderate function.

The right ureter is somewhat dilated and slightly atonic, but it is not sacculated and has a muscular wall.

The bladder consists of two distinct loculi with the septum lying in the coronal plane. The right ureteric meatus is extremely narrow and only admits a bristle with difficulty. It opens into the anterior loculus. This portion of the bladder is pyriform in shape, with the apex at the internal urinary meatus. The anterior and antero-lateral walls are muscular and show a considerable degree of hypertrophy. The mucosal aspect is trabeculated and has blood clot adherent to it. The interlocular septum forms the posterior wall. It is thin, smooth and entirely fibrous. That it is imperforate was demonstrated by injecting different coloured fluids into the two loculi through their respective ureters; there was no mingling of the dyes.

The internal urinary meatus is a minute orifice opening into the urethra from the anterior loculus only. A horsehair was passed through it with great difficulty, partly owing to the narrowness of the lower funnel-shaped portion of the anterior loculus and partly on account of the urethral obstructions noted below.

The posterior loculus is a blind fibrous sack which communicates with the right ureter through an aperture wide enough to admit a lead pencil. The posterior and postero-lateral walls are thin and fibrous, but microscopically they contain a few muscle fibres. The interlocular septum constitutes the anterior wall.

The urethra is definitely patent from the external meatus as far proximally as the bulb where the bristle was obstructed. On opening the urethra and inspecting the mucosa with a lens, two long and narrow elevations were seen on the floor, about one millimetre in height and extending from a point just distal to the internal sphincter, almost as far as the external sphincter.

The testes are incompletely descended. They are attached to the ureters, close to the bladder, by fibrous tissue. To each testis is attached an epididymis and vas deferens, but the vas is not patent and becomes lost as an individual structure on the fibrous wall of the ureter.

In the prostatic region is a small fibro-muscular mass. No glandular tissue could be demonstrated in this microscopically. There is no evidence of *vesiculae seminales* nor of ejaculatory ducts.

No other congenital abnormality was found *post mortem*.

#### Comment.

This case appears to be one of imperforate ureter in which the left kidney never attained any functional value owing to the absence of any external opening. In addition, there was partial occlusion of the right ureteric orifice, which produced a slight degree of hydronephrosis and an incomplete obstruction to the posterior part of the urethra, resulting in hypertrophy of the bladder wall of the anterior loculus.

During intrauterine life the fœtus does not depend entirely on its own kidneys for the excretion of the waste products of metabolism. Probably this infant survived in a condition of latent uræmia with the assistance of the maternal circulation during the period of gestation. Independent existence, however, was impossible with the depleted quantity of functional renal tissue available.

#### Summary.

1. The incidence, aetiology and pathology of multilocular bladders are discussed with reference to the available literature.

2. An attempt is made to enunciate criteria which will serve to differentiate this condition from that of diverticulum, either congenital or acquired.

3. A classification on pathological and embryological lines is suggested.

4. A specimen of the genito-urinary tract of an infant is described. A multilocular bladder is included among several abnormalities.

#### Acknowledgement.

In addition to Dr. E. L. Newman, I am also greatly indebted to Professor A. N. St. G. Burkitt, who placed the facilities of the Department of Anatomy of the University of Sydney at my disposal during these investigations.

#### Bibliography.

- Watson and Cunningham: "Diseases of the Genito-Urinary System", 1908, Volume I, page 442.  
 Young and Davis: "Practice of Urology", 1923, Volume II, page 58.  
 I. D. Michelson: *Zeitschrift für urologische Chirurgie*, Volume XXIII, 1927 (cited by Mézan).  
 Joly: *American Journal of Urology*, Volume X, 1914, page 486 (cited by Fischer).  
 G. L. Hunner: Kelly and Burnham's "Diseases of the Kidneys, Ureters and Bladder", 1922, Volume II, page 377.  
 W. E. Lower: Cabot's "Modern Urology", Volume II, page 37.  
 J. W. Thomson Walker: "Surgical Diseases and Injuries of the Genito-Urinary Tract", 1914, page 395.  
 H. Fischer: *Surgery, Gynecology and Obstetrics*, Volume X, 1910, page 156.  
 H. Marion: "Traité d'urologie", 1919, Volume I, page 570.  
 E. L. Keyes: "Urology", 1919, page 540.  
 Fuller: *Journal of Cutaneous and Genito-Urinary Diseases*, December, 1908 (cited by Fischer).  
 Primrose: *Glasgow Medical Journal*, September, 1909 (cited by Thomson Walker).  
 von Fritsch: "Verhandlung des deutschen Gesellschaft für Urologie", III Kongress, 1912 (cited by Thomson Walker).  
 S. Mézan: "Contribution à l'étude clinique de la vessie multiloculée", *Journal d'urologie*, January, 1929, page 31.  
 M. Lebel: *Annuaire de l'Université de Sofia*, December, 1923 (cited by Mézan).

### Reports of Cases.

#### RENAL CALCULUS IN THE THIGH.

By T. G. HEWITT, M.B., Ch.M. (Sydney),  
 Cairns.

H.N., A MAN, aged forty-five years, on May 15, 1932, complained of a lump in the right groin that had been present for two months. There was pain on walking or coughing, and sometimes pain in the penis. The lump was slowly increasing in size.

He was married and had three children. He had suffered from "fever" fifteen years previously and "nervous trouble" two years previously, when he had had pain and discomfort in the right side.

He was thin and of slight build. The temperature was 37.5° C. (99.6° F.) and the pulse rate was 90 per minute. The heart sounds were weak and there was a soft systolic murmur at the apex; extrasystole occurred about every tenth beat. The lump in the groin was about 12.5 by 5.0 centimetres (five by two inches); it was situated in the region of the femoral triangle. The skin over the swelling was raised and slightly thickened, but not inflamed. The swelling was tender. The liver was easily palpable, and the liver dulness appeared to be a little higher than normal. There was tenderness in the right loin, where an indefinite mass was palpable in the region of the kidney.

The X ray investigation, carried out by Dr. H. Flecker, showed a most interesting condition. His report was as follows:

Skilogram of the upper part of the right thigh shows a dense, opaque body of the size of a pea, below and medial to the lesser trochanter. A repetition of this



region showed the same body unaltered in size and position, but considerably rotated, indicating that it is surrounded by fluid. Skiagram of the lumbar region showed no indication of any caries, but a perfect cast of the renal pelvis and calyces, evidently due to a dense, opaque calculus, is present on the right side, and another shadow near the tip of the right transverse process, and also one midway between these two, but about six inches from the mid-line. The right dome of the diaphragm presents a boss. Examination of the gall-bladder by the method of Graham and Cole showed a normal shadow and emptying time.

Examination of the urine revealed a slight cloud of albumin and a small amount of pus. By cystoscopic examination after injection of indigo-carmin, the dye appeared in normal time from the left ureter, but none appeared from the right within twenty minutes of injection.

At operation the femoral triangle region was first investigated. All the tissues on section were inflammatory in nature, and about 2.5 centimetres (one inch) deep was a large abscess cavity in which was the calculus revealed by the X ray examination. Pathological examination of the calculus removed from the thigh showed that it was not biliary in origin. The abscess appeared to come from beneath the ilio-inguinal ligament, and it was possible to sweep a finger completely around the neck of the femur. Tubes were left in and pus drained for a couple of weeks. His general condition improved sufficiently for a second operation; an incision was made over the kidney area. Here also there had been destruction of tissue, and another calculus was encountered between two layers of the muscles. Pockets of pus surrounded the kidney and extended behind the liver upwards to the position of the boss referred to in the X ray report. Another calculus was found outside the kidney and the large stone showing in the kidney area in the film was removed. Owing to the inflammatory nature of the tissues and the resulting adhesions, it was not considered that his condition would warrant the removal of the kidney as had been intended, so tubes were inserted and he was returned to bed.

The lower wound soon ceased draining after the kidney area had been drained. The sinus in the latter area drained for four months.

He was last seen on November 2, 1932, when he reported his condition as very good indeed. He had been working for about two and a half months, and had put on condition, stating that he was heavier than ever before, although he still appeared to be of slight build. He still had pyuria, and no doubt will shortly have to undergo another operation for removal of the kidney remnants.

This case is of interest, not only for the rarity of the condition, renal calculus in the thigh, but also as showing what the body can stand. The kidney must have been causing trouble for some years, and Nature finally tried to effect a cure, with but an indifferent result. That the patient was able to carry on so long as a cane farmer, with an abscess forming and extending from the subphrenic region down into his thigh, is remarkable.

#### INJURY TO CARPAL BONES.

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##### Case I.

E.K., SINGLE, aged thirty-four, occupied in domestic duties, was carrying a pile of fourteen dinner plates and a dish on September 4, 1930, when she felt a sudden pain in her left wrist. She cried out, but managed to push the plates on to a shelf. The wrist quickly swelled. She was taken to a doctor by her employer, who thought she had sprained her wrist. He put on a splint and gave a lotion to rub. The splint was removed at the end of a week and a wrist strap was worn. The wrist was very

sore. It was examined by X rays five months later, and the condition as shown in Figure I was revealed. The diagnosis was Kienbock's disease. There had been no pain or disability of any kind in the wrist, and no injury could be recalled previous to the accident described. In spite of the pain she was able to carry on, not doing her full work, but getting through, sparing the injured wrist. The lunate was removed by operation, with infection, but the ultimate result (communication dated June 6, 1933) is a wrist and hand with fair function and little disability as regards her work.

##### Case II.

B.B., aged fifty-three years, married, engaged in domestic duties (her own), had a family of eight children. On December 20, 1932, she was ironing a silk shirt (the iron weighed about ten pounds), when suddenly she noticed the iron was scorching the material. She quickly lifted the iron straight up with the wrist flexed and felt sudden pain, "like the stab of a knife", in the wrist. It made her feel sick. The part swelled, but she got relief from bandaging and managed to get her work done "somehow" until the date of consultation (April 27, 1933), some four months later. X ray examination revealed an "old fracture of the os navicular" (see Figure II).

##### Comment.

The degree of violence necessary to cause injury to any of the carpal bones, recognizable by X rays, is generally understood to be very considerable, such as produced by a fall on the outstretched hand. Although without doubt such injuries are most often produced by great force, it would appear that violence of a much milder degree may result in considerable damage.

From the first case quoted above there was an unsuccessful suit under the *Workers' Compensation Act*, and in the hearing expert medical evidence was given to the effect that damage extensive enough to cause a crushing fracture or ligamentous lesion with interference with blood supply to the lunate was, by the method described, not only not probable, but not possible. Various theories as to the causation of Kienbock's disease have been put forward to explain the condition apart from trauma, and it seems probable that the need for such theories is felt because in the majority of cases no history of severe trauma is forthcoming. If one accepts the possibility of damage by such ordinary domestic accidents as quoted above, the need for theories of causation apart from trauma practically disappears.

One must recognize the importance of extreme caution in accepting a history of injury when an action for compensation seems likely. In the two cases quoted great care was taken in trying to find any other possible cause of the damage without result. In the second case, however, the patient being a woman of fifty-three years with a large family and doing all her own household work, the probability of such traumata is manifest. Still, here there was no possibility of contemplated legal proceedings, and she was quite positive that she had had no trouble in the wrist previously. It seems to me, therefore, that one must accept the history, that is, that the injury, crush fracture of the carpal scaphoid, was caused by the sudden lifting, with the wrist flexed, of a flat iron weighing about ten pounds. The fact that the patient was a woman of fifty-three makes the injury more easily acceptable to reason than if she were a young woman.

The first case is perhaps not so easily acceptable, but having gone into the history carefully when the patient was referred to me for an opinion on the hand (post-operative), I was impressed with the very definite account of the accident and could not get any story of previous injury or incapacity.

The salient points in the case are:

1. The fact that a young, strong woman of thirty-four years alleged that she received an injury resulting in the condition known as Kienbock's disease whilst performing the very ordinary task of putting a pile of plates on a shelf.

2. She thought she had a "sprained wrist", and saw a doctor at once, who treated it as such.

3. It was not examined by X rays until five months later, when the typical picture of Kienbock's disease was revealed.

4. Although the wrist was swollen, stiff and painful, she continued to do her work, sparing her hand and using the other as much as possible to relieve the injured one.

The following description is from Speed,<sup>(1)</sup> under the heading of "Kienbock's Disease of the Lunate Bone":

A condition known as isolated osteitis of lunate bone has been recorded. A severe trauma of hand and wrist does not appear to be essential, and the patient may forget that he injured himself, as he seldom stops work on account of it. Some time later pain and swelling appear in the wrist. A Roentgenogram is generally taken at this time. The bone structure of the lunate is observed to be less firm. The edges are crumbled and the whole lunate bone may be broken into two or three fragments. A question then arises whether the person suffered an injury at work and is entitled to damage under a compensation act, or whether the diseased condition of the bone has been caused by trauma which occurred outside of his work.

Pathology probably depends on interference with blood supply which arrives at the bone via ligaments. When slight trauma is received the ligaments may be torn, bone nourishment interrupted, and absorption begins. Primary fractures often cause the same results because of the impeded vascular supply and poor osteogenic properties of the bone. The changes always appear late, up to three to five years after an injury of the bone.

It occurred to me that if such an injury were possible in the manner described, there would almost certainly be a case on record, and a visit to the British Medical Association Branch library gave me the following in the *Journal de Médecine de Bordeaux*:<sup>(2)</sup>

*M.L., act. 17, la profession de cuisinière . . . et c'est en portant une très lourde marmite qu'elle a éprouvé une vive douleur correspondante à un mouvement de distorsion du poignet droit.*

This was in October, 1930. The wrist swelled and was thought to be a sprain. She consulted the author in November, 1931, and on X ray examination the diagnosis of Kienbock's disease was made. The weight of the pot is not recorded, but in the first case quoted the pile of plates numbered about 14 (and dish), and I find with some surprise that one of my own dinner plates weighed no less than fifteen ounces, so that the pile was in the region of fifteen pounds. The force, therefore, was not so inconsiderable as appears at first sight.

An interesting point in the case of the *cuisinière* is that M. Lasserre treated the condition by extirpating the lunate by the dorsal route with the result:

*Trois mois après l'intervention, cette jeune fille a repris ses occupations. Actuellement on constate une très légère limitation des mouvements de l'articulation du poignet et toute douleur a disparu.*

This line of treatment had been adopted in the first case above, and at the hearing was condemned by the medical evidence already referred to.

Like the aetiology, the treatment of this condition appears to be a matter for argument, and the authorities speak very guardedly as to prognosis by whichever method adopted.

Malone<sup>(3)</sup> gives an excellent review of the literature (with five cases) and has formed the opinion that: "It does not seem credible from the etiological and roentgenological findings that there is an inflammatory or infectious element in this condition."

#### Summary.

1. Two case histories are given of severe injuries to carpal bones sustained in the course of ordinary domestic work.

2. Careful inquiry failed to elicit any history of injury or disability previous to the alleged accident.

3. Attention is drawn to the fact that great violence in the generally accepted sense is not necessary to produce severe damage, for example, fracture of scaphoid or Kienbock's disease.

4. Treatment by excision of the lunate in Kienbock's disease has given excellent results.

#### References.

- <sup>(1)</sup> Speed: "Fractures and Dislocations", 1928.
- <sup>(2)</sup> C. Lasserre: "Maladie du semi-lunaire: Extirpation", *Journal de Médecine de Bordeaux*, May 10, 1932.
- <sup>(3)</sup> L. A. Malone: "Post-Traumatic Cystic Disease of the Carpal Bones", *American Journal of Roentgenology and Radium Therapy*, May, 1933.

### ACCIDENTS IN PYELOGRAPHY AND HYSTERO-SALPINGOGRAPHY: THE VENOUS ESCAPE OF RADIOGRAPHIC CONTRAST MEDIA.

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FROM time to time fatalities have been reported as occurring during pyelography, the contrast medium used being a non-viscid one, such as sodium iodide solution. Theories have been advanced to account for such deaths, including that of escape of the contrast medium into the circulation.

The phenomena of pyelovenous backflow in pyelography was first observed some years ago, and several cases of such invasion of the renal cortex, with observations on *post mortem* specimens, were reported by Hinman<sup>(1)</sup> in 1927. Leon Jona,<sup>(2)</sup> in 1930, during experimental filling of the renal pelvis in dogs, found that with potassium iodide solution (30%) under a head of pressure of only 35 centimetres rupture of the renal pelvis easily occurred with, in one case, filling of the intercostal veins, seen in an X ray photograph of the animal.

Béclère,<sup>(3)</sup> in 1928, referred to invasion of the circulation by lipiodol in the course of experimental intrauterine injections of iodized oil in *post-operative* specimens.

That the escape of gas into the circulation during the performance of utero-tubal insufflation (Rubin's test) forms a very real danger has been shown by reports of deaths in the course of this test.

Two such cases were reported by Moench<sup>(4)</sup> in 1927. *Post mortem* examination immediately after death revealed gas bubbles in the heart and larger blood vessels, with no other obvious cause of sudden death present. Wong<sup>(5)</sup> and others last year reported a case of escape of lipiodol into the utero-ovarian venous system during hystero-salpingography. The writer recently had a similar experience.

#### Case Report.

Mrs. J.S., aged thirty years, had been married seven years and had never been pregnant. This patient attended at the Women's Hospital, Melbourne, on April 29, 1933. She spoke very little English and a history was difficult to elicit. Her only complaint was of sterility. An apparently healthy woman, her last menstrual period had occurred normally and ended six days previously.

Examination disclosed no physical abnormality. Bimanual examination showed a small uterus in mid-position and anteverted. The right tube was palpable. The left tube could not be felt. Through a speculum a long, stenosed cervix was seen, with a scar running along one side of it, apparently from some previous interference, although no history of this could be elicited.

A Rubin's test was done on this date, the pressure being taken to 140 millimetres of mercury, with no penetration of the Fallopian tubes by the gas. There were no unusual phenomena.

Hysterosalpingography with lipiodol was done on May 10, 1933. Eight cubic centimetres of lipiodol were injected by light finger pressure from a twenty cubic centimetre

"Record" syringe attached to a cannula. The oil had been warmed and ran in easily. An X ray picture (see illustration on special plate) was taken immediately. The patient then started to cough and persisted in spite of all treatment directed towards stopping the cough. This lasted about half an hour and then ceased. Apart from this, the patient looked and felt quite well. The X ray photograph disclosed a small bicornuate uterus, with the left Fallopian tube blocked near its uterine end and the right tube apparently patent, with some lipiodol free in the peritoneal cavity.

There was also a complete filling of the utero-ovarian venous plexus and both ovarian veins by the iodized oil.

Another film taken within ten minutes showed no trace of the oil in the veins, only a little lying free in the peritoneal cavity remaining visible.

A pyelogram with "Tenebryl" was done immediately and disclosed no abnormality.

The cough apparently was due to the lipiodol from the veins being deposited in the lungs.

#### Conclusions.

1. Escape of radiographic contrast media from hollow viscera into the circulation is a real entity.
2. In view of this there is inherent danger in the Rubin's test.
3. There is danger in the use of substances such as sodium iodide, which possess possible toxic properties, if injected intravenously.
4. There is comparative safety in the use of solutions such as lipiodol (oily), "Uroselectan", "Per-Abrodil" and "Tenebryl" (watery) as contrast media.
5. Tubes apparently non-patent to Rubin's test were patent to lipiodol. Sicard<sup>(1)</sup> states that this is frequently found and he cannot offer an explanation.

#### Acknowledgements.

I wish to thank Dr. J. Leon Jona, honorary surgeon to out-patients, Women's Hospital, Melbourne, in whose clinic this work was performed, and Dr. Colin MacDonald, honorary radiologist, Women's Hospital, Melbourne, for his help and advice on the radiology of the case.

#### References.

- (1) Frank Hinman: "Pyelo-Venous Backflow in Pyelography", *Surgery, Gynecology and Obstetrics*, May, 1927, page 592.
- (2) J. Leon Jona: "Pyeloscopy-Radioscopy of the Kidney Pelvis", *Surgery, Gynecology and Obstetrics*, Volume LI, 1930, pages 5 to 55.
- (3) C. M. Béchère: "The Importance of Precise Measurements of Pressure During Intrauterine Injection of Lipiodol", *Gynécologie et Obstétrique*, Volume XIV, 1926, page 104.
- (4) G. L. Moonch: "Two Cases in which Death Followed Insufflations", *The Journal of the American Medical Association*, Volume LXXXIX, 1927, pages 522-523.
- (5) A. I. H. Wong, C. Wu and M. H. Chien: "Escape of Lipiodol (Iodized Oil) into the Utero-Ovarian Venous System in Hysterosalpingography", *The Chinese Medical Journal*, Volume XLVI, February, 1932, pages 162 to 167.
- (6) J. A. Sicard and J. Forestier: "The Use of Lipiodol", 1932.

### TWO INTERESTING NAIL CASES.

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#### Case I.

THE first case is that of a girl who had crushed her finger some six years previously. Some months after the injury she developed a painful swelling on the edge of the nail fold, about the centre of the arc. This was incised (I think) and revealed the presence of a small, abnormally situated nail. The nail is a miniature one which, towards its tip, shows dystrophy. It is growing from the free margin of the nail fold and is in no way connected with the underlying nail. The nail itself, shows a deficiency in growth on one side, whence the piece of nail bed was traumatically dislodged. The nail has never shown any

sign of recovery and it is evident that the underlying nail bed has been permanently damaged and that a portion was removed by the accident. It is quite obvious that the avulsed portion of the nail bed lodged in the wound, and from it the small miniature nail has grown, as shown in the photograph.



FIGURE I.

Showing the appearances of the nail in Case I.

#### Case II.

In the second case the nails were those of a man suffering from onychosis, possibly psoriasis, with periosteal and arthritic changes. He was seen in December, 1932.

The patient, W.E.M., aged thirty-eight years, was born in London and had been resident in Australia for about five years. He had not resided in the tropics. His occupation at the time of examination was that of farmer, but formerly he had been a mechanical engineer. He was married and lived in the country.

#### Symptoms.

About seven months previously he had noticed tingling and pain over the distal joints of both thumbs. This was followed by swelling over the joint areas. A little later the bases of both nails became discoloured and the nails began to thicken. Subsequently the surface (to use the patient's words) "rotted through" on one of them and revealed "dry, discoloured material". Subsequently other nails were similarly affected, and in every instance the nail changes were preceded by bone and joint disease immediately proximal to the nail. In those fingers in which there had been no joint change there had been no nail change.

The nails were in every instance affected at the bases with discoloration which spread under the nail towards



the free margin, causing thickening as well. Several of the nails "rotted through" the surface (see Figures II, III, IV and V).



FIGURE II.  
The hands of the patient described in Case II.

The disease is still in progress and the right fifth nail is getting involved. There is a spot of tenderness and swelling on the radial side of the nail fold at its base.



FIGURE III.  
The thumbs of the patient described in Case II.

There was no history of joint trouble elsewhere. The patient said that he felt perfectly well except for the trouble in his fingers.

#### General Examination.<sup>2</sup>

The patient was very sun tanned, but was really not a healthy colour. Some of the teeth were in a very bad condition; these were extracted; the remaining ones were



FIGURE IV.  
Fingers of left hand in Case II.

of doubtful health. The sinuses were not above suspicion. The tonsils were infected. No abnormality could be detected in the alimentary tract; the liver and spleen appeared to be normal. Examination of the urine revealed no abnormality. No motor or sensory abnormality was



FIGURE V.  
Fingers of right hand in Case II. Note the most recent area at outer and proximal part of fifth finger-nail.

detected. The cardio-vascular and pulmonary systems seemed to be normal. Two specimens of blood gave no reaction to the Wassermann test. The blood was examined with the following results:

<sup>2</sup> I am indebted to Dr. Gordon Hislop for notes on the general examination.

Erythrocytes, per cubic millimetre ..	4,590,000
Hæmoglobin value .. .. .	76%
Colour index .. .. .	0.8
Leucocytes, per cubic millimetre ..	10,200
Neutrophile cells .. .. .	46%
Lymphocytes .. .. .	26%
Transitional cells .. .. .	4%
Eosinophile cells .. .. .	24%

The red cells were normal. The von Pirquet test gave no reaction.

The X ray appearance is seen in Figure VI. The skin surface and scalp were clear of rashes.

#### Examination of the Nails.

When the surface of the nail was broken, a lot of underlying dry and mica-like debris was seen. Nails were affected only where there were joint and bony changes above them; when there was no bone lesion there was no nail change. No fungus was seen in the course of several examinations.

#### Comments.

I am submitting the case because it has several interesting features: (i) absence of skin lesions (not uncommon), (ii) freedom of the nails from involvement when the adjacent bone and joint were intact, (iii) the likeness to psoriasis, (iv) the special feature of this intimate association of nail changes with adjacent joint changes only.

I should like to hear an expression of opinion on this association of joint changes and adjacent psoriasiform changes in the nails. Is it psoriasis or are the nail changes purely secondary to congestive changes from the arthritis? (We have all seen cases of skin psoriasis clear up after removal of septic foci.)

Nervous diseases did not appear to be the underlying cause in this case. There was no suggestion of leprosy about the fingers, nor elsewhere. There had twice been no response to the Wassermann test. There was no obvious tuberculosis. But there was ample evidence of septic absorption from the teeth and perhaps from the sinuses. The patient's diet was lacking in vitamin content, as he had to live, more or less, on bread and meat, with little vegetables and fruit.

#### Acknowledgements.

My acknowledgements are due to the X ray and photographic department of the Perth Hospital for their splendid photographs and X ray prints, and to Dr. Gordon Hislop for looking over the patient's general condition.

#### Post Scriptum.

The patient was seen some months later, when under salicylates, iron and arsenic. There was an improvement. Some bad teeth had been extracted (April, 1933).

#### PNEUMONOKONIOSIS.

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In view of the appearance of an article entitled "Silicosis", by Dr. H. E. McMahon, in THE MEDICAL JOURNAL OF AUSTRALIA of April 1, 1933, it may be of some interest and relevance to refer to a case of pneumokoniosis of unusual character. The patient was a woman, aged twenty-five years, attending the London Hospital in March, 1924. She had been employed for the previous four years as a barley packer in an establishment in the East End of London. Her life was otherwise that of an ordinary city dweller. She complained of cough and shortness of breath. After investigation of the respiratory tract by a

physician, a diagnosis of pneumokoniosis was made, and it was considered that the condition had probably resulted from her occupation.

The X ray examination, with which I was concerned, revealed the appearance characteristic of pneumokoniosis: fine, but very dense stippling scattered throughout both lungs, more marked on the right side, and associated with a moderate increase in peribronchial fibrosis.

I enclose a reproduction which may be of some value to indicate the appearances seen in the X ray film.

The case seems worthy of notice on account of the association of pneumokoniosis with the occupation of packing cereals.

## Reviews.

### THE TREATMENT OF VARICOSE VEINS AND HÆMORRHOIDS.

From an extensive experience of the injection treatment of varicose veins and hæmorrhoids V. Meisen writes upon these subjects at considerable length, devoting the major part of his book to the former subject.<sup>1</sup>

Preliminary chapters deal fully with the normal and morbid anatomy and with the physiology of the venous circulation. The importance of a knowledge of the *venæ communicantes* and their functions is stressed. Much detailed information is given concerning the valves and their functions as well as on the bearing of injection experiments upon problems of local circulation.

From the clinical aspect it is pointed out that dilatation of the internal saphenous vein first occurs at a junction of some communicating branch with the main stem, which later becomes incompetent. Attention is drawn to the type of varicose vein hidden by the resultant oedema and discoverable only by palpation. Among the special types of varicose veins the author discusses the post-phlebitic varix, the sequel to a deep thrombosis. He does not appear to share the general opinion that the process is a compensatory one and treats such veins by limited injection.

A good description is given of the Trendelenburg phenomenon or experiment and of those of Perthes and Magnus in its elaboration and confirmation. Magnus, in particular, demonstrated that in the erect position incompetency of the saphenous vein permits reflux from the femoral to the deep muscular veins, a ready explanation of the rarity of embolism in such cases.

Among the complications and sequelæ space is naturally given to the phenomena of thrombosis, phlebitis and ulcer. Thrombosis is held to be a benign process, confined to superficial veins and arising quite independently of any infective origin. Phlebitis, on the other hand, is held to affect rarely veins already varicose and to be associated solely as a precedent.

An interesting historical survey, dealing particularly with the fluctuating fortunes of injection methods, introduces an excellent chapter on treatment, in which the author describes his technique and the solutions employed. His methods, with the exception of his attack upon post-phlebitic varices, are quite orthodox. Reliance is placed mainly upon a mixture of equal parts of 25% sodium salicylate and 10% sodium chloride solutions as an obliterative agent, in amounts of two to ten cubic centimetres. A description of the method of application of an Unna's stocking contains some useful points and others of doubtful value.

The final chapter, that dealing with hæmorrhoids, is somewhat superficial in its treatment of the subject.

<sup>1</sup> "Varicose Veins and Hæmorrhoids and Their Treatment", by V. Meisen, M.D., with preface by A. Krogh, Ph.D.; 1932. Copenhagen: Levin and Munksgaard; London: Humphrey Milford. Demy 4to., pp. 149, with illustrations. Price: 10s. 6d. net.

## The Medical Journal of Australia

SATURDAY, SEPTEMBER 30, 1933.

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Reference to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

### THE FEDERAL COUNCIL.

THE first meeting of the Federal Council, reported in the issue of September 23, 1933, was an occasion of great moment in the history of the British Medical Association in Australia. Up to the time of that meeting the Australian Branches had been linked together by the Federal Committee. The formation of the Federal Council marked the recognition by the Branches of a common aim and of a desire to pursue that aim together. The initial steps required courage and called for a display of mutual trust by the Branches. The result is well known. The Federal Committee served its purpose and served it well. But, and this needs particular emphasis at present, it was a body without any power of initiative. It had to act as a coordinating and consultative body. It made recommendations to the Branches on matters referred to it by them. A time had to come when a body so formed would become obsolete. Thus the Federal Council has arisen, a corporate body with

power to initiate and to carry into effect measures advantageous to the Branches.

Perusal of the report of the Federal Council meeting will show that the deliberations covered a wide field. Some of the questions discussed were of the utmost importance to all the Branches. There is no need to refer to all the matters in this place; but, if attention is drawn to one or two of them, the readiness of the Federal Council to face its responsibilities will be made clear. For some time past there has been a feeling among certain members of the Association that members of the six Branches should occasionally have an opportunity for the exchange of views on medico-political matters. It has been felt that a meeting of selected members from all parts of Australia would not only increase the interest of members, but that at such a meeting recommendations might be made for the consideration of the Federal Council. For such a gathering the term representative body has been used. Since this name is that of the annual meeting of representatives held in England, it should not be used to designate the proposed gathering in Australia; the term convocation is suitable. The formation of such a convention was discussed at the last meeting of the Federal Committee, and it was considered again at the meeting of the Federal Council. The members of the Federal Council were cautious, and decided, very wisely, to do nothing in haste. A report is to be submitted to the next meeting of the Federal Council and the proposal will be considered again. In the meantime the Federal Council has decided to make what must be regarded as an experiment. The possibility of the formation of a hospital policy for the British Medical Association in Australia has been considered for some time. Owing to the diversity of conditions in the several States, the difficulties of forming such a policy are enormous. At the same time many have expressed the opinion (it has also been urged in these columns) that there should be laid down some general principles on which the Branches might act. The Federal Council has approved of the suggestion of its subcommittee and has resolved that, if possible, hospital problems are to be discussed at the Hobart Congress next



January by "selected representatives of the Branches". This is the type of discussion which has been in the mind of those who have wished to call together a convocation of members to discuss matters of policy. The Federal Council is thus giving a trial to the convocation proposal. The result will be awaited with interest.

Mention of a convocation of members and of a hospital policy for Australia shows that the Federal Council has before it matters of great import. We have shown that it is cautious and will not act without careful consideration. For this all thinking members of the Branches will commend it. At the same time the Federal Council must remember that the Branches expect leadership; they expect the Federal Council to use the powers invested in it. The days of tedious reference to the Branches on matters of all kinds, the days of slow-moving machinery, are, or should be, done. Admittedly the road before the Federal Council is neither clear nor easy of ascent, but the Council has the confidence of the Branches to spur it on.

### Current Comment.

#### THE INFLUENCE OF THORACIC DEFORMITY ON CARDIAC FUNCTION.

THE shape of the thorax may have an influence on the thoracic contents. If the thorax is grossly distorted, its contents, or some of them, must be distorted also; it is reasonable to assume that such distortion would have a deleterious effect on function. This seems very often to be overlooked. Every medical practitioner has experienced the difficulties of interpreting the signs detected at physical examination of a malformed thorax. Certain signs are disregarded, being merely attributed to the thoracic deformity; but it is possible that many of them are truly significant of the state of the thoracic organs. Very little has been written on the subject in English, though various Continental writers have stressed the importance of spinal deformity in the impairment of cardiac function. The recognition of this effect is by no means new; for Hippocrates noted that persons suffering from spinal curvature above the diaphragm were subject to dyspnoea. An investigation of the effect of spinal deformities on the heart has recently been made by Joseph Edeiken.<sup>1</sup> A study was made of twenty-six patients suffering from deformities, mostly of a severe grade, of the

cervical or thoracic region of the spine. Fifteen had kypho-scoliosis, five had scoliosis, four had kyphosis only, and two had lordosis. The histories were inquired into and each patient was examined physically. Orthodiagrams were drawn in all but three cases, in which skiagrams were taken at a distance of 1.8 metres (six feet). Electrocardiograms were made in twenty-four cases.

Edeiken points out that, according to Bachmann and other observers, the heart is frequently found to be hypertrophied at *post mortem* examination, and that in most cases the hypertrophy is mainly on the right side of the heart. The lung on the side of the spinal convexity is usually compressed and atelectatic, but, according to Bachmann, may be nothing more than a "tongue of fibrous tissue" in some of the very severe cases. There is a compensatory emphysema of the other lung. The deformity usually commences in early life, and the thorax lags behind the rest of the body in its development; as a consequence the capacity of the thorax, hence of the lungs, is below normal. The thoracic wall is limited in movement; frequently the diaphragm alone moves in respiration. The respiratory pumping effect is therefore diminished or even lost. These factors would all tend to throw an additional burden on the right side of the heart. Twisting, kinking or alteration in the course of the aorta would tend to throw a strain on the left side of the heart.

Edeiken remarks that there is difficulty in interpreting the clinical findings. The apex beat is often displaced. The area of precordial dullness to percussion frequently does not agree with the cardiac outline traced in an orthodiagram. Apical systolic murmurs and accentuation of the second sound at the pulmonary area are common. A rough systolic basal murmur, which is sometimes heard, may be due to a "twist or kink of the aorta". Edeiken noted a difference of more than ten millimetres of mercury in arterial blood pressure in the two arms of five of the fifteen patients suffering from kypho-scoliosis; he suggests that this may be due to "kinking or twisting of the aorta and its large branches".

In Edeiken's series most of the patients with severe scoliosis or kypho-scoliosis had signs of embarrassment of the right side of the heart; some were cyanotic and some had edema of the legs. In many cases the radiographic appearances were similar to those found in mitral stenosis; Edeiken suggests that this is due to enlargement of the right ventricle and rotation of the heart as a result of the spinal deformity. Enlargement of the right ventricle itself, of course, tends to cause rotation of the heart. Kypho-scoliosis causes pronounced changes in the size, shape and position of the heart. There is no uniformity in the alterations in shape and position, which vary according to the individual deformity. A remarkable feature is the tendency of the aorta to keep its normal relationship to the spine, despite the deformity; in two cases in which *post mortem* examination was made, the aorta

<sup>1</sup>The American Journal of the Medical Sciences, July, 1933.

passed directly across the thorax to reach the spine. The two patients with thoracic lordosis in Edeiken's series had no cardiac symptoms; radiographically the heart appeared to be somewhat flattened from front to back.

Electrocardiographic examination revealed axis deviation in six of twenty-four cases. Edeiken remarks: "The infrequency of axis deviation despite displacement and rotation of the heart is probably due to the opposing effects of rotation around longitudinal and anteroposterior axes." The electrocardiographs of only four patients were abnormal; one of these patients suffered from thyrotoxicosis and another from arterial hypertension. Edeiken considers that the cardiac disorder is probably secondary to the lung deformities in most cases, but that kinking or twisting of the great vessels may be "responsible for certain cardiac signs and symptoms".

This is an interesting piece of investigation, of clinical as well as academic value. The findings, no doubt, are in the main correct; but there are two factors that Edeiken does not mention; these may tend to modify any conclusions that may be drawn. First, there is the possibility of error in the interpretation of X ray appearances, which, after all, consist merely of shadows; by drawing attention to this, we do not wish to belittle the value of X rays in cardiology, rather do we think their use should be encouraged. Secondly, there might frequently be a cardiac lesion due, not to the thoracic malformation, but to the disease originally responsible for this.

#### SKIN REACTIONS TO POLIOMYELITIS VIRUS.

THE success that has attended work on the skin reactions obtained by intradermal injections of the toxins of scarlet fever and diphtheria has led to corresponding inquiries in poliomyelitis. The observations of Schick and of the Dicks have been of great importance from the standpoint of public health. They have made possible the recognition of children susceptible to the infections of diphtheria and scarlet fever, and have thereby simplified the problem of immunization. If a similar service could be rendered to preventive medicine in the attack on poliomyelitis the benefit to the world would be great. By analogy it would seem likely that certain children are immune to poliomyelitis, though whether such immunity is always natural or may be sometimes acquired through the incidence of larval attacks is doubtful. The very nature of the disease, with its serious and often tragic sequelae, is in itself a stimulus to such inquiries and, therefore, all work on the subject is welcome.

A. B. Sabin, W. H. Park and C. W. Jungeblut have published some work designed to show whether those who have recovered from poliomyelitis, or who appear to be resistant to it, display any cutaneous allergy to the heat-treated virus.<sup>1</sup> One of these

authors had previously noted a rise in temperature in monkeys that had recovered from experimental poliomyelitis after the intracranial or subcutaneous injection of the virus, and considered this as a specific allergic reaction. Further, a skin reaction was obtained by tests on a number of children with residual paralyses due to this disease. The present investigation amplified the latter observations and, although its outcome is disappointing, the work is a definite contribution to knowledge.

Virus-containing solutions were made from the spinal cords of monkeys with typical poliomyelitis and normal controls prepared from normal animals. The solutions were tested for sterility, and the absence of active virus was proved by intracranial injection into monkeys. The dose used was two-tenths of a cubic centimetre and this was injected intradermally into the flexor surface of the forearm. Observations were made half an hour after the injection (to eliminate confusion by the occasional occurrence of urticarial reactions in some sensitive persons), again after the lapse of six or eight hours and after twenty-four hours. A reaction less in extent than ten by ten millimetres was disregarded. Various groups of persons, including children and adults, were tested with various virus preparations. The groups of those who had no history of poliomyelitis were compared with those who had suffered from the disease at some more or less distant period, or who were at the time convalescing from it. At first the results quoted above in an earlier investigation appeared to be confirmed, and a positive skin reaction was obtained in convalescents, though no reaction occurred from the normal cord extracts. But later it was found that certain cord extracts, though undoubtedly containing heat-inactivated virus, failed to evoke any skin reaction in these same people. Further, certain normal cord preparations were found that sometimes gave delayed skin reactions apparently identical with those caused by the virus-containing extracts. Therefore, no completely reliable control could be prepared, nor could it be said that the test material would infallibly give the desired reaction in previous sufferers from poliomyelitis. This dual partial failure has not yet been satisfactorily explained.

This work does not dispose of the possibility of differentiating between the susceptible and the resistant to the disease. The writers remark that unheated virus might act differently, but that further investigations are beset by difficulties and not unattended by remote dangers. It is to be hoped that further efforts will be made to clear up this immunological problem. It is doubtful to what extent treatment with convalescent serum is really valuable, even in patients seen early in the course of the disease. That early recognition is of the utmost value has, of course, been proved in this country recently, as elsewhere. But, notwithstanding all that has been done, poliomyelitis remains a menace to the children of the community, and any advances in our knowledge concerning it will be received with enthusiasm.

<sup>1</sup> Archives of Internal Medicine, June, 1933.

## Abstracts from Current Medical Literature.

### PHYSIOLOGY.

#### Muscular Exercise and the Disappearance of Ethyl Alcohol in Man.

T. M. CARPENTER, R. C. LEE AND M. BURDETT (*The American Journal of Physiology*, July, 1933) have determined the effect of muscular exercise and the disappearance of ethyl alcohol in man by measuring the respiratory exchange and the alcohol in expired air, urine and blood. With the helmet open-circuit respiration apparatus metabolism measurements were made with the subject at rest, during muscular exercise and during recovery from exercise, both on control days and immediately after the subject had ingested thirty and fifty cubic centimetres respectively of absolute alcohol in water, equalling a total volume of two hundred and fifty cubic centimetres. Determinations were made of the amount of alcohol in the air current leaving the helmet and of the amount of alcohol in the total volume of urine voided during each experiment. In a special series of observations the alcohol in the blood was determined one, two and four hours after the injection of alcohol with the subject at rest, and in an experiment with two hours of work. The results showed that muscular exercise had no significant effect on the disappearance of ethyl alcohol from the body. The amount of alcohol eliminated in the expired air during muscular work and in the urine during rest or during muscular work played a relatively small rôle as a factor in the disappearance of alcohol. The metabolism of alcohol in human bodies is independent of activity and proceeds at a uniform rate whether the individual is at rest or performing muscular exercise.

#### The Entrance of Fluid into the Blood in Haemorrhage.

E. F. ADOLPH, M. J. GERBASI AND M. J. LEPORE (*The American Journal of Physiology*, July, 1933) deal with the rate of entrance of fluid into the blood in hemorrhage. They have sampled the arterial blood at brief and frequent intervals in dogs that were anaesthetized by "Amytal" and urethane. Seven kinds of analyses were employed as measures of concentration, three of which were upon heparinized plasma. Rapid and severe bleeding was produced by allowing blood to flow from a cut artery. Considerable fall in arterial and venous blood pressures occurred, and the pressure was restored but slowly after the bleeding had ceased. The corpuscular elements became concentrated at first; this concentration was prevented, however, either by excising the spleen before the hemorrhage occurred or by working with the animal under urethane anaesthesia, which kept the spleen empty. The

plasma was greatly diluted in all hemorrhage experiments. The initial dilution began immediately and on the average continued for twenty-two minutes, sometimes exceeding the duration of the bleeding. Thereafter a very slow and continued dilution occurred, lasting over an hour. The authors regard the initial dilution as a measure of the progressive increase in plasma volume; calculations showed that a mean of 35% of the plasma removed was restored in this initial period. The mean rate of dilution added 0.8 cubic centimetre per minute to each hundred cubic centimetres of plasma, which was equivalent to an entrance of water into the blood from the tissues of 0.25 cubic centimetre per kilogram of body weight per minute. To test whether the viscera were essential in furnishing this fluid to the blood, the aorta and vena cava were clamped above the diaphragm. Subsequent hemorrhage from the fore portion then produced only very small and slow dilution of the plasma. The authors believe that the lowered mean pressure of the blood in the capillaries is the immediate factor that induces fluid to enter the blood. The amount of extravascular fluid available is apparently very small in skeletal portions of the body. The dilution ceases when the effective osmotic pressure of the plasma is reduced by the added fluid to a certain new level that is related to the slightly restored mean capillary blood pressure.

#### Basal Metabolism in Senility.

F. A. HITCHCOCK AND J. R. MATSON (*The American Journal of Physiology*, July, 1933) have measured the basal metabolism of fourteen aged men and seven aged women. There were no pathological conditions in any of the subjects, except those resulting from senility. The men ranged in age from seventy-four to ninety-two years, the average being eighty-two. The women's ages ranged from seventy-seven to one hundred and six, with an average of eighty-six years. All tests were made with a Benedict-Roth apparatus. Each subject was tested on at least two different days. In case the first two tests did not agree within 5%, the tests were continued on succeeding days until agreement was obtained. Results were computed according to both the Harris-Benedict and the Aub-Du Bois standards (Krogh modification). The best agreement was obtained with the Harris-Benedict standards. The average for all fourteen men was only 2.2% higher than the average figure obtained from the Harris-Benedict prediction formula. Eleven of the fourteen subjects varied less than 10% from these standards. The average variation was 6.9%. When judged on the basis of the Aub-Du Bois standards, this group of men showed an average metabolism of -5.73%. The average deviation was 7.97%. According to the Aub-Du Bois standards, twelve of the fourteen men had metabolic rates below normal, while, according to the

Harris-Benedict standards, six were minus and eight were plus. There was a greater deviation from the standards among the women. The average deviation from the Harris-Benedict standards was 11.58%, and from the Aub-Du Bois 9.79%. All seven of the women were minus according to both standards. The oldest subject tested was a woman 106 years old. She had an oxygen consumption of 83.1 cubic centimetres per minute. Her total calories per hour were 23.99, and calories per hour per square metre of body surface were 21.25.

#### The Effect of Exercise on the Digestive Work of the Stomach.

F. A. HELLEBRANDT (*The American Journal of Physiology*, July, 1933) writes on the effect of exercise on the digestive work of the stomach. She is studying the digestive secretory cycle by gastric intubation and fractional analysis. A Boas meal of strained oatmeal gruel is introduced under gentle pressure by way of a Rehfuß tube and the saliva is continually aspirated by suction. The samples withdrawn are titrated for free and total acidity and for total chlorides. After the establishment of resting response, gentle exercise, short, violent exercise of speed, or protracted severe exercise of endurance is taken and the deviation of the secretory curve is determined when the muscular work precedes and when it follows the meal. Gentle exercise augments secretory activity. Severe protracted exercise induces an anacidity which may last as long as one hour and which is followed by a delayed hyperchlorhydria and hypersecretion. Short, violent bouts of exercise likewise produce an anacidity and delayed, but definitely augmented, secretory activity. The author also finds, as a result of the administration of an opaque meal followed by fluoroscopic examination, that exercise of a severity which produces anacidity also brings about muscular atony and an early delay in emptying, which is followed by hypermotility. Gentle exercise hastens emptying time. Increased peristalsis occurs after mild exercise.

### BIOLOGICAL CHEMISTRY.

#### The Constituents of Urine and Sweat.

H. H. MOSHER (*Journal of Biological Chemistry*, February, 1933) discusses the previous literature on the chemical constituents of sweat and has studied the urinary and perspiratory products from three males in excellent physical and normal mental condition. No dietary changes were prescribed and no effort was made to control their moisture intake. The investigation lasted two days. Full details of the methods of collection of the samples are given, and by means of these methods contamination with dirt and cutaneous bodies and decomposition by bacteria or fungi were prevented. Both the urine and sweat were



analysed for total solids, chlorides, sulphates, organic matter, non-protein nitrogen, sugar, lactic acid, and the non-protein nitrogen fractions, urea, uric acid, ammonia, amino-acid nitrogen, creatinine and creatine. The methods used for the analyses are described. Qualitatively sweat was found to be very similar to urine in composition, though the relative amounts of the various components varied considerably. Urine was found to be a much more concentrated solution containing from three to five times the amount of total solids and from five to nine times the amount of organic matter.

#### The Variation of pH of Brain Tissue.

ERIC GORDON HOLMES (*Biochemical Journal*, Volume XXVI, Number 6, 1932) in previous communications has demonstrated that the amount of lactic acid formed by the excised brain after incubation is dependent, within limits, on the level of the blood sugar at the time of death, while the lactic acid found in brains which had been rapidly fixed in liquid air is constant in amount and independent of the blood sugar, except when the latter had been reduced by insulin to a low level. The present work was undertaken to see whether the changes in lactic acid content were associated with any demonstrable change in the pH of the tissue. Mice were used for the experiments and the results are arranged in six groups as follows: (i) Animals with normal blood sugar, decapitated and the heads frozen; (ii) animals with normal blood sugar, decapitated and the heads frozen; (iii) animals decapitated after glucose injection and the heads frozen; (iv) animals decapitated after glucose injection and the heads incubated; (v) animals decapitated during insulin hypoglycemia and the heads frozen; (vi) animals decapitated during insulin hypoglycemia and the heads incubated. The freezing was carried out by means of liquid air. The results obtained show that the pH values of mouse brains which have been fixed in liquid air are higher in the case of hypoglycemic than of normal or hyperglycemic animals. In all cases the pH of incubated brains was lower than those which were frozen immediately. The changes in pH observed were of the same order as those calculated from the titration curve of brain tissue and lactic acid, allowance being made for the amount of lactic acid which would be liberated in the various circumstances considered.

#### Vitamin C.

LESLIE JULIUS HARRIS and SURENDRA NATH RAY (*Biochemical Journal*, Volume XXVII, Number 2, 1933) discuss the available evidence for and against the contention that hexuronic acid and the antiscorbutic factor are identical. They also report a series of further experiments with the object of ascertaining whether antiscorbutic activity is an inherent property of hexuronic acid itself or is due to some

associated impurity. In the first place they show that the antiscorbutic activity of several natural sources was approximately proportional to the amounts of hexuronic acid recoverable from them; thus suprarenal cortex from the ox had three times the potency of orange juice, in exact accord with the fact that its apparent hexuronic acid content, as judged by the yield recoverable, was likewise three times as great. Specimens of hexuronic acid derived from both an animal and a vegetable source were examined for antiscorbutic activity under the same conditions and no difference could be detected and hexuronic acid, after repurification processes and recrystallization always maintained its original activity. The hexuronic acid content of more than thirty naturally occurring foodstuffs, and including lemon juice, grape-fruit juice, tomato juice and pineapple juice, was determined chemically and found to account quantitatively for their known antiscorbutic properties. In the guinea-pig the antiscorbutic activity of the suprarenal or liver was found to be lost with the development of scurvy, and this coincided with the disappearance of hexuronic acid from these organs. With the rat or dog, species which are able to synthesize their own vitamin when none is provided in the diet, the antiscorbutic activity and the hexuronic acid both remained unaffected on vitamin C-free diets. In the vegetable kingdom, where synthesis of vitamin C occurs during germination the authors show that hexuronic acid appears concurrently. These workers also show that the rate of destruction of hexuronic acid under varying conditions of aeration, heat and alkali resembled that of antiscorbutic activity, and they conclude from this series of experiments that hexuronic acid is itself the vitamin.

#### Hæmopoietin, the Anti-Anæmic Factor in Hog's Stomach.

LOUIS KLEIN and JOHN FREDERICK WILKINSON (*Biochemical Journal*, Volume XXVII, Number 2, 1933) have described experiments on the preparation of extracts and fractions from hog's stomach containing hæmopoietin, the active substance effective in pernicious anemia. Active stomach extracts could not be obtained by methods of extraction analogous to those employed with liver, and an active extract could be obtained only by the method used by Buchner with zymase, which involved the subjection of a mixture of fresh stomach tissue and sand to high pressure in a specially constructed apparatus. Addition of alcohol to this press juice yielded a precipitate in which the whole of the activity of the juice appeared to be concentrated, and the alcoholic filtrates were found to be inactive. Other active fractions were prepared by fractional precipitation with alcohol and by fractional iso-electric precipitation. The results of these experiments show that hæmopoietin is more unstable than, and has pro-

perties different from, the active anti-anæmic principle in liver. Among the authors' results are the following: (a) There was a close parallelism between the protein reactions and hæmopoietic activity; that is, all the hæmopoietically active products gave the protein colour and other tests. (b) Peptic activity and hæmopoietic activity were not necessarily related to each other. For example, fractions could be very strong peptically, but inactive hæmopoietically, or possess strong hæmopoietic activity and contain very little pepsin. (c) There was a relatively high proportion of nitrogen (13.5%) in the hæmopoietically active fraction and a low value for non-protein nitrogen (0.6%). (d) There was a low nitrogen content (5.9%) in the inactive fraction, a high proportion of which (3.2%) was in the amino form and practically the whole of which was non-protein. (e) There was a relatively high phosphorus content (3.6%) in the active fraction. The authors consider that the clinical experiments with gastric juice, the necessity for an extrinsic substrate, the association of pernicious anemia with deficient enzyme secretion, the difficulty of extracting hæmopoietin from stomach tissue, its digestion by the prolonged action of the proteolytic enzymes pepsin or trypsin, its association with the protein fraction of stomach press juice, its instability to heat, and its sensitiveness to chemical treatment, all harmonize with the view that hæmopoietin is an organic substance of complex structure, probably a protein and possibly enzyme-like in its nature.

#### The Ascorbic Acid Content of the Adrenals and Livers of Different Animals.

JOSEPH LOUIS SVIBELY (*Biochemical Journal*, Volume XXVII, Number 3, 1933) has made a study of the reducing capacity and hence of the ascorbic acid content of the adrenals and livers of different animals, and describes and discusses the actual technique used in estimating the ascorbic acid. He draws the following conclusions from his experiments: (i) The ascorbic acid content of the adrenals, based on one gramme of tissue, is much higher in every animal than that of the liver. (ii) The amount of ascorbic acid in the adrenals and liver is in moderate agreement with the known antiscorbutic activities of these organs. (iii) Certain animals, the rat, mouse and rabbit, are able to store ascorbic acid in the adrenals and liver, even if fed on a vitamin C-free diet. Dogs and cats were also able to do so when fed on meat which is relatively low in vitamin C. (iv) Guinea-pigs fed first with liberal amounts of spinach and then placed on a vitamin C-free diet showed first a decrease in the ascorbic acid content of the liver and then of the adrenals, indicating that the liver serves as a reserve store for the ascorbic acid. The ascorbic acid content of various organs was estimated and muscle gave the lowest values.

## Special Articles on Treatment.

(Contributed by request.)

### XVIII.

#### THE TREATMENT OF WHOOPING COUGH.

THE seriousness of whooping cough as a disease of young children is perhaps not universally appreciated as it should be. Yet statistics show that for children under five years of age, it is much more deadly than any other infectious disease. In 1931 in New South Wales the several infectious diseases killed children of this age as follows: Whooping cough, 181; diphtheria, 130; measles, 23; and scarlet fever, 15. For the past forty years in New South Wales deaths from whooping cough have averaged 180. And the younger the child, the more dangerous has been the disease. Of those who died, 61% have been children under one year, and another 36% children aged one to five years. So that 97% of the deaths have been of children in the first five years of life.

Whooping cough not being a notifiable disease, there are no statistics of the case mortality in the population at large. In the Coast Hospital, Sydney, in the eleven years 1922-1932, there were 453 cases with 53 deaths, a case mortality of 11.7%.

We have whooping cough with us always, but in some years it assumes epidemic prevalence. In 1878 the whooping cough death rate was 56 per 100,000; in 1907, 39; in 1913, 19; in 1925, 14. The progressive fall in the death rate is gratifying, but the dreadful experience of 1878 stands as a warning of the grim possibilities.

As might be expected, the disease is more likely to be prevalent in winter. But in New South Wales in 1931 the deaths were more numerous in the last four months—124 of the total 136 for the year.

It is now generally accepted that the disease is caused by the bacillus described in 1906 by Bordet and Gengou. This bacillus abounds in the sputum and in the respiratory tract. The patient is infectious by reason of the droplets of bacillus-bearing mucus which he projects forcibly whenever he coughs. He may infect anyone within range of these projected droplets, but probably the range is not more than six or eight feet. Infection is probably always direct from patient to victim. Third persons, carriers, or "infected articles" are probably of little importance in spreading the disease, the bacillus being incapable of surviving away from the respiratory tract. The patient is infectious from the beginning of the initial catarrh and during the first three weeks or so of the whooping stage. This is in harmony with the bacteriological findings. The bacilli in the sputum are most numerous in the catarrhal stage (78% of cases). After the fourth week they were found in only 9% of the cases.

The typical symptoms—paroxysmal coughing culminating in vomiting—are well known and need not be described here. But the apparent exciting causes of some at least of the attacks are worth noting in connexion with the management and treatment of a case. Over-eating or drinking, coughing, crying, sneezing, violent muscular effort, chilling or irritation of the skin, psychic disturbance, such as anger or fright, have all been blamed for the precipitation of an attack.

The pathological effects of most importance in causing death are respiratory and digestive. Bronchopneumonia is produced in these cases by the extension of a bronchitis or bronchiolitis. Emphysema may arise from rupture of air vesicles. Vomiting may be so incessant that the child is in danger of starvation. Diarrhoea is frequent in infants.

Prophylaxis is of the utmost importance in regard to children of five years and under. A child with whooping cough should be kept apart from all other children who have not had it. If whooping cough is prevalent, the younger children who have not had it should be very carefully guarded against contact infection. The American Health Association regards a patient as infectious till three weeks after development of the whoop. In New York City a child is excluded from school till one week after the cessation of the whoop. In Chicago, after the first

two weeks the child is permitted on the street, but for the next three weeks he must be accompanied by an adult and must wear a yellow arm-band, lettered "Whooping Cough". In New South Wales the Education Department prescribes exclusion from school for six weeks of a whooping cough patient unless he presents a medical certificate of freedom from infection. In any case, the whoop must have ceased before he can be readmitted to school. A contact is not excluded from school unless he has a suspicious cough.

Pertussis vaccine has been much used in prophylaxis as well as therapeutically, and it has been found effective in either preventing or modifying the attack. At the State Serum Institute of Copenhagen the practice is to give an injection as soon as possible after exposure. A forty-eight hour culture is used; the vaccine contains ten billion bacilli per cubic centimetre, and four doses are injected, ranging from 0.5 to 1.0 cubic centimetre at intervals of four days or less. The Commonwealth Serum Laboratories' pamphlet recommends much smaller doses, namely, 500 million, 1,000 million, and 2,000 million at intervals of five to seven days. For adults double, and for infants under one year half these amounts.

The treatment of the child who has developed whooping cough is as follows.

The immediate dangers are: (i) malnutrition on account of the incessant vomiting, (ii) exhaustion from the violent exertion entailed, (iii) bronchopneumonia and other lung complications due to infection by the Bordet-Gengou bacillus and by other (secondary) bacteria.

Malnutrition is sometimes a very serious problem. The child may vomit all food and drink, and may be seen to waste from day to day. Semi-solids in small quantities are generally better tolerated than fluids. For infants and small, weak children a firm, smooth abdominal binder may be useful. It supports the abdominal wall and has some effect in lessening the vomiting.

The child should be kept warm in bed. Abundant fresh air, but shelter from draughts and from exciting sounds or sights are the indications.

Sedative drugs are of use in lessening the violence of the attacks. Belladonna is one of the best of these and is well tolerated by children. Antipyrin with sodium bromide, "Luminal", all have their supporters. Intramuscular injections of ether had a vogue some years ago as a sedative, but the injections are painful and may cause sloughing.

Vaccine treatment alone has any claim to be considered specific. The Commonwealth Serum Laboratories supply it as "Pertussis Vaccine" and "Pertussis Vaccine (Mixed)", the latter containing *Bacillus influenzae*, pneumococcus, and *Micrococcus catarrhalis*. Their vaccines range in strength from 50 million to 2,500 million *Bacillus pertussis* to one cubic centimetre. The injections may be given either subcutaneously or intramuscularly, and the therapeutic dosage for a child over one year recommended in the official pamphlet is 500, 1,000, 2,000, 4,000 and 8,000 million at two-day intervals. For infants under one year half these doses should be given. If the mixed vaccine is used, much smaller doses are recommended.

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## British Medical Association News.

### SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held on June 29, 1933, in the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney. Dr. A. HOLMES & COURT, the President, in the chair.

#### Varicose Veins and Hæmorrhoids.

Dr. V. M. COPPLESON read a paper entitled: "The Present Position of Injection Methods in the Treatment of Varicose Veins and Hæmorrhoids" (see page 431).

Dr. J. COLVIN STOREY, invited by the President, said that he had not intended to speak, but thanked Dr. Coppleson for his paper and said that at least it had the merit of being his own and not a *résumé* of other people's work, as were many of the papers read at their meetings.

Dr. Storey was glad that Dr. Coppleson had mentioned the risks of the injection method and would like to impress on those present that, before commencing such treatment, they should be sure that they were dealing with a patient whose malady was due to hæmorrhoids. Occasionally errors occurred, as when the hæmorrhoids were due to some more serious condition.

Dr. Storey himself had had no experience of the injection treatment of hæmorrhoids or varicose veins. He fought shy of it because he had an inherent dislike of putting a sharp instrument to inject an irritant into an area when he could not be sure where it was going. He had seen one patient who had bled nearly to death after injection as a result of sloughing of the bowel, and another who suffered from severe hæmorrhage. Dr. Storey did not see how any careful operator could be sure of the exact position of the end of the needle. No bell rang to announce that the correct position was reached, and the thickness of the mucous membrane varied. In many cases, if rigid rules of hygiene were adopted, if the patient defecated before retiring and if defecation was followed by ablation and a cold water douche, then he would have quite a bearable life.

What Dr. Coppleson had said about interfering with inflamed hæmorrhoids was only surgical horse sense. No one would dream of doing such a thing.

Dr. Storey wondered why the treatment of thrombosis of veins was so illogical. If they were asked to treat natural thrombosis of a vein they would keep the patient in bed to prevent embolism; but when they caused a thrombus by injection of a vein they sent the patient about his daily business. He knew that the answer was that the so-called natural thrombus was bacterial in origin. This was not always true. Nor were all thrombi following injection necessarily sterile. He asked why more emboli did not occur in the operative treatment of varicose veins. Dr. Storey had known one patient who had sneezed after operation and it nearly killed him, for an embolism had immediately taken place; it was surprising that more of these accidents did not happen.

Dr. Storey thought that they should consider gravely before they advised the patient to have any treatment whatever for varicose veins. He would like Dr. Coppleson to tell them what clinical indications he considered necessary before he decided to undertake treatment. If Dr. Storey himself had varicose veins, they would have to give him a great deal of trouble before he would have treatment. Interference with varicose veins used to be considered a serious matter, and operation used to be more frequent than it was now. Now veins were less often operated on, either because the condition was less common or because it was dealt with by injection treatment. Nevertheless Dr. Storey thought that they should have very sound reasons before they advised the patient to have anything done at all. He still needed persuasion before he would adopt the methods suggested by Dr. Coppleson.

Dr. A. L. BUCHANAN said that he was very much indebted to Dr. Coppleson for his remarks that evening. He had given a masterly exposition of the experiences of most surgeons in such work. He had not minimized the difficulties in the technique nor the dangers associated with the injection treatment. At the same time he had quoted encouraging percentages of cures that concurred with the experience of a great number of surgeons. Dr. Buchanan himself had dealt with several hundred cases of varicose veins and hæmorrhoids. The majority of cases of both conditions had been suitable for injection and good results had been obtained. Nearly always injection treatment could be used, resulting in a considerable degree of cure. It might be necessary to resort to surgery in order to get complete cure.

It was generally true that piles with prolapse when the patient was standing were not suitable for injection. But there was no reason why they should not try to get some result, since the measure was free from danger. Dr.

Buchanan had three cases in mind in which the patients had been cured. In these instances the patients should be given the choice.

Dr. Coppleson had suggested that when the hæmorrhoid was partly internal and partly external it was unsuitable for injection. In many cases, however, the bulk of the hæmorrhoid was internal, but appeared external. In such instances Dr. Buchanan had injected the internal part with good results. The tightening of the mucosa helped to obliterate the swelling, which appeared to be the external hæmorrhoid.

In regard to varicose veins, Dr. Buchanan's experience did not differ from that of Dr. Coppleson, but he wanted to add his experience of two things that had not been mentioned. First, regarding the question of sloughs. He had had one himself and had seen three or four other cases. He had seen no suggestion in the literature for dealing with such sloughs. But he had found that they were easily dealt with. In the "Medical Annual" of 1933 sloughs were said to take six months to heal. But local treatment was easy; he curetted away the tissue impregnated with the injection material and converted the lesion into an ulcer which healed in the ordinary way. Secondly, Dr. Buchanan spoke of spider nævi, which were named in the list of conditions unsuitable for injection treatment. He had seen many lower limbs thus affected and had treated four cases by injection. The technique was difficult; the needle must be inserted a small distance from the nævus and brought up under the largest channels that could be found. Some stood out more clearly than others. One-half to one minim could be injected right on to each vessel. If results were obtained they would see an immediate blanching in that particular small channel and its branches. Dr. Buchanan was convinced that with patience spider nævi were amenable to treatment by the injection method.

Dr. P. D. BRADDON thanked Dr. Coppleson and wished to mention one or two things that had not been discussed. In regard to the contraindications for injection treatment, for a long time it had been said that white leg was a contraindication; but from his experience he did not think so. There were practically no contraindications except thrombo-phlebitis.

Dr. Braddon wished to join issue with Dr. Storey when he said that they did not know exactly where the end of the needle was.

He had had just the same experience as Dr. Buchanan with prolapsed piles when patients refused operation. He injected them, while explaining the risks to the patient; eventually the patient did very well.

In conclusion, Dr. Braddon asked Dr. Coppleson whether he had ever been sufficiently courageous to inject a varicocele.

Dr. MERVYN THOMAS said that he had seen only one case of marked toxicity from urethane. This man had an idiosyncrasy to salicylates; he might have been sensitive to quinine. He had extensive hæmorrhoids. An oral dose of five grains of quinine bihydrochloride was given without producing any untoward effect. At the first injection only one cubic centimetre was given. Dr. Thomas took the man home in his motor car; within a quarter of an hour the patient complained of profuse sweating, his face became red, and he had a typical epileptiform seizure which was most distressing. However, he was quite all right the next day. Then injections of carbolic acid and almond oil were given with good effect on the hæmorrhoids.

In regard to the percentage of patients who might develop sloughs, Dr. Thomas had not seen this occur for eighteen months; then just recently he had seen a case in which, despite the ordinary precautions to prevent the injection substance going into the subcutaneous tissue, the patient had developed a slight slough at the site of every injection. He did not know whether this was due to a congenital weakness of the vein, and would be interested to know whether Dr. Coppleson had had a similar experience. Dr. Storey had stated that a bell did not ring to indicate the correct position of the needle, but there was a typical appearance showing if the needle was in the right stratum or not.



As to prolapsed hæmorrhoids, in several cases when operation had been refused, after injection into the right layer the subsequent lesion remained as a small tag easily removed under local anæsthesia. This was a quick and easy process, as contrasted to the weeks in bed that operation demanded, and was therefore most suitable if the patient could not afford to spend time away from work.

Dr. P. FIASCHI, having in view the army regulations about varicose veins, asked Dr. Coppleson how these persons stood in view to conscription. In the near future war, would they be fit for service in the field.

Dr. Coppleson, in reply, said that he thought Dr. Storey liked to play the part of the carp in the pike pond. He was glad he had spoken, because he had put forward the conservative view. This must pass, because what was an old principle had been made possible in practice, and, in spite of conservatism, it was now making a big advance in modern treatment. He had omitted to mention the application of the principle to other conditions, such as nævi and hydrocele, because the scope of his paper had seemed too great for the time at his disposal.

The treatment of hydrocele by injection was no new method. Also the method might be used with success in the treatment of certain enlargements of bursæ. It had even been applied to the treatment of hernia. Although it seemed a wrong principle, apparently success had been obtained in a large number of cases.

In reply to Dr. Braddon, Dr. Coppleson said that he had injected a varicocele—one, and no more—in a poor fellow who earned a living by selling chickens. The injection was given about Christmas time. He had injected sodium morrhuate, and the man had to be put to bed with morphine and had spent a miserable Christmas in severe pain. The results, however, were good.

The gynecological surgeon was also making use of this method in several conditions; it was being given a trial in every possible way.

In the injection of piles, if the operator knew anything about the anatomy of the rectum, then he could know exactly where the end of the needle was. He could, if necessary, lift the mucous membrane with the end of the needle and make sure that it was in the right layer before he started to give the injection.

In regard to embolus, Dr. Coppleson said that the figures for occurrence of this condition following operation were from 2% to 4%. After injection of varicose veins with quinine and urethane there was no authentic recurrence of embolism ever reported.

In the treatment of phlebitis many people were allowed to walk about.

The behaviour of the superficial veins after thrombosis of the inferior vena cava was sufficient evidence that varicosity might be associated with a compensatory phenomenon, and until more was known about the causation of varicosity in veins, a number of very vexed questions must await their answers and in the meantime be based on opinion and experience.

From practical experience it would seem that the indication for active treatment of varicose veins of the leg was almost any varicosity. However, there was a difference of opinion whether veins should be injected following white leg or a previous phlebitis.

The reason why any vein should be treated was that varicose veins were inefficient and the varicosity worked from the small branches to larger ones, and by blocking the small varicosities the formation of the larger could be prevented or minimized.

Dr. Coppleson had injected third degree piles, and whilst immediate results obtained often appeared satisfactory, recurrence occurred and fibrous polypi were likely to form. In these cases operation was undoubtedly preferable.

Sloughs following the injection of varicose veins he had omitted to mention in detail from lack of time. In 250 cases there were 2,300 injections, out of which he had eight sloughs.

There were methods of dealing with this condition. First, there was the immediate injection of saline solution into the tissues. They would know when the sclerosing

solution was in the tissues, for the patient would complain of pain, and there would be an anæmic area which would later become grey and then slough. Dr. Coppleson never injected saline solution, because he thought it might spread the sclerosing solution further afield. In regard to the curing of sloughs, mentioned by Dr. Buchanan, one McPheeters, an American, had written about treating sloughs. He had excised them and had reported a number of deaths. They were dealing with devitalized tissue, and he was never content to take any active treatment. He had also seen severe burns following the use of fomenta.

Dr. Coppleson had given up trying to treat spider nævi. They could in some instances get rid of such a nævus, but a dark stain was still present from the blood pigment.

Dr. Thomas had mentioned the toxicity of quinine. Dr. Coppleson had seen two patients with severe quinidism and thought that possibly two factors were concerned. The first was the make of quinine. Both the severe cases in his experience had occurred in the same week, and both patients had received quinine from the same batch of ampoules. Dr. Coppleson had returned the whole batch and had seen no severe quinidism since. Also he thought the solution had something to do with it and referred to the question of boiling the ampoules. Many of the ampoules were closed at the bottom by crystals of quinine. Boiling dissolved the crystals and, there was reason to believe, made the solution more toxic. Dr. Coppleson was against this practice. Thus two factors tended to alter the toxicity of quinine.

As to the toxicity of sodium morrhuate, Dr. McCristal told him of a patient who had been so severely ill from injection of this drug that they thought he would die.

Finally, in reply to Dr. Fiaschi, Dr. Coppleson said that there was no doubt about the minor degrees of varicosity. Moreover, the incidence of varicosity in young men was not great. In these cases, if only a few injections were required, the man could certainly be made fit for military service.

Dr. A. HOLMES A COURT congratulated Dr. Coppleson and said that it was valuable to hear the observations of a practical man, who was a master of his subject, dealing with his own experiences. His contribution was extraordinarily interesting and instructive. The modern methods of sclerosis held many difficulties and dangers which Dr. Coppleson had described with great lucidity and skill.

A MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Darling Building, University of Adelaide, on July 27, 1933, Dr. E. BRITTEN JONES, the President, in the chair.

#### Anæmia.

Dr. C. T. C. DE Crespigny read a paper entitled: "Observations on Cases of Rarer Forms of Anæmia" (see page 439).

Dr. L. B. BULL, in discussing some of the aspects of Dr. de Crespigny's paper, suggested that the cases brought forward by Dr. de Crespigny might indicate that pernicious anæmia was not a definite entity. Although pernicious anæmia appeared to be a clinical entity, the findings were not strictly pathognomonic. At one time the megaloblast was considered to be pathognomonic, and then megalocytosis was found to be the most characteristic blood change. Further, achlorhydria was present in the vast majority of cases, but pernicious anæmia occasionally occurred in people who could secrete hydrochloric acid, and many people had achlorhydria without developing pernicious anæmia. The discovery that liver of herbivorous animals contained a specific substance which acted as a stimulus on the bone marrow, changed their point of view and had led to very important advances in knowledge of the normal control of hematopoietic tissues. The work of Castle and others had shown that this substance or its precursor could be formed from protein in the normal stomach. The absence of hydrochloric acid from the stomach did place a certain limit on absorption from the duodenum, but blood changes were present in

only a small proportion of such cases, and then were usually of chlorotic type. It was the absence of the specific substance which led to a megalocytic change in the blood, but this did not always constitute pernicious anaemia. In the Adelaide Hospital several cases of megalocytic anaemia had been found associated with damage of the liver, in one case by miliary deposits containing numerous acid-fast bacilli, in another case by cirrhosis in a young girl, and in other cases where the liver damage was due to other causes. It would appear that the liver might play some part either in storage or the making of this specific substance available. There was a certain danger in being over-anxious to classify disease processes into definite entities, and it was safer and more instructive to keep in mind the mechanisms that were involved. The normal haematopoietic mechanism might be so affected as to lead to the production of megalocytes, but the condition might have little or no relationship to pernicious anaemia, and a differential diagnosis might be very difficult to make.

Dr. E. McLAUGHLIN said that he thought that the cases Dr. de Crespigny had described that evening showed very clearly the necessity of thorough investigation of the conditions at the outset. All the cases at first sight resembled, more or less closely, pernicious anaemia. Although in most cases of pernicious anaemia with anaemia of a severe degree the blood picture was definite, every now and then a certain opinion could not be expressed on the blood picture alone. The pathologist should be given an opportunity of reexamining the blood, if possible, before treatment had been instituted, and of carrying out whatever other pathological examinations seemed relevant. Too frequently one met with cases which had been treated as pernicious anaemia without adequate diagnostic evidence, and it often became impossible later to establish a correct diagnosis.

Dr. McLaughlin also stressed the necessity of reexamination at intervals in obscure cases. He had met with cases which had presented indefinite blood pictures at one period and which had become manifest as pernicious anaemia at a later date. He had seen anaemias pass from the hypochromic type to a pernicious picture, and it was well known that a picture of pernicious anaemia might, after liver treatment, when the available iron was low, give place to one of chlorotic type. In such a case, if the diagnosis had not been established, doubt might be thrown on the original diagnosis.

Megalocytosis alone did not constitute pernicious anaemia and was only the reflection of a certain type of bone marrow reaction.

Dr. McLaughlin had encountered several cases which showed a blood picture very suggestive of pernicious anaemia, which had not responded to adequate liver therapy and had subsequently been shown at autopsy to have suffered gross liver damage.

Any variation from the classical picture should be investigated. In the cases presented by Dr. de Crespigny it appeared that all relevant observations had been made, and it became clear early that the patients (with one exception) were not suffering from pernicious anaemia. He wished to remind the meeting that it was the function of the clinician to establish the diagnosis, for he alone could assemble all the facts.

Dr. de Crespigny had referred to the fact that most of the patients had shown continued pyrexia. He (Dr. McLaughlin) would like to point out that this was a very common finding in grave anaemias and did not necessarily denote an infection. Continued pyrexia often ceased abruptly after transfusion.

#### NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

Phillips, Gilbert Edward, M.B., B.S., 1929 (Univ. Sydney), Department of Surgery, University of Sydney.

## Correspondence.

### ENDEMIC TYPHUS.

SIR: May I, through your columns, thank Dr. William Jas. Penfold and Miss Hildred M. Butler for their letter in your issue of August 5, 1933, drawing the attention of your readers to a recent article by Felix and Rhodes. I was not familiar with this article when I made the bacteriological investigations referred to in connexion with the case published by Dr. F. Blois Lawton and Dr. Alan Murray in this journal on June 24, 1933.

I note with interest the findings of Dr. Penfold and Miss Butler in two cases of infection with *Bacillus proteus* investigated by them.

Yours, etc.,

LUCY M. BRYCE.

Melbourne,  
September 5, 1933.

### THE PROBLEM OF GASTRIC CARCINOMA.

SIR: Your anonymous correspondent "Pathologist", who attempted to criticize adversely my remarks concerning Gregersen's modification of the benzidine test, has now furnished me with G. A. Harrison's text book on "Chemical Methods in Clinical Medicine" (not "Chemical Clinical Methods") as his authority.

On perusing the section devoted to "Occult Blood", that is pages 433 to 439, one is unable to locate the quotations embodied in "Pathologist's" letter of August 14, 1933, but under "Technique of Tests for Occult Blood" are described (i) Benzidine Test, (ii) Gregersen's Slide (Benzidine) Test, (iii) Spectroscopic Test, (iv) Snapper's Method, and (v) Pyramidone Test.

On page 437 G. A. Harrison sums up the position between methods one and two thus:

Method (2) really amounts to making the technique less sensitive so as to avoid the preparation of the patient essential in method (1).

It would appear that the eminent authority "Pathologist" chose to quote disagrees with his contention.

As a good deal of misconception appears to have arisen with regard to the above test may I bring to the notice of your readers the following six points?

1. A positive Gregersen's test is evidence merely of a lesion or breach of the mucous membrane of the gastrointestinal tract and cannot be regarded as a specific test for carcinoma ventriculi.

2. Gregersen has shown that less than one in 3,000 to one in 20,000 of blood in the stools cannot be regarded as pathological.

3. The researches on fat embolism by my revered teacher and former chief—the late Sir Rickman J. Godlee—would suggest that fracture cases are not suitable subjects to utilize for the investigation of the influence of diet on the above test (see *The Lancet*, 1911, Volume I, pages 1062 to 1064). Adults, proven free from injury or disease, should be substituted and collateral confirmatory tests undertaken.

4. Hematinic drugs, such as liver extract, hæmoglobin and red bone marrow, should be temporarily withheld during the performance of Gregersen's test.

5. "Roughage" aids, and conversely a milk diet tends to check, occult bleeding. Professor Hugh Maclean writes: "By putting a patient on to a more or less liquid diet internal bleeding tends to be obviated, and so the change in diet tends to defeat its own ends."

6. The customary compatibility of the information obtainable from: (a) History and/or physical signs, (b) radiological examination, (c) Gregersen's test undertaken by different observers, indicates the value of the above test in the diagnosis of surgical diseases of the gastro-duodenal segment.

The Bureau of Microbiology, '93, Macquarie Street, Sydney, has kindly consented to carry out the suggestion of Dr. C. Craig.

Yours, etc.,  
H. RUTHERFORD DARLING.

229, Macquarie Street,  
Sydney,  
September 11, 1933.

#### "PROFESSIONAL BRETHREN."

Sir: I think "Over Forty Years a Member" is to be commended for recording his complaints upon certain matters in the issue of the journal dated August 26, and I have been waiting for some member with a facile pen to forward a reply. It would seem, however, that the policy of our profession as regards the ethical conduct of members is comparable to the attitude of mid-Victorians on the question of social evils—a virtual abhorrence of comment.

The ultimate question in the letter: "Are we professional brethren?" calls for an answer, and the most favourable reply I can give is: "Some of us are", and I estimate the proportion at about 60%.

Any student of Sydney University who was fortunate enough to attend the lectures in medical ethics given by the late Robert Henry Todd and make contact with his remarkable personality, cannot have been actuated by other than the highest of ethical ideals on entering the profession. It is possible that the young graduate retains his high and cherished opinion of medical ethics throughout his hospital residentship, but upon commencing private practice his illusions are dispelled by repeated acts of unethical conduct by his (mostly senior) colleagues.

I wish it were possible to limit one's complaints to the lack of amicability mentioned by "Over Forty Years a Member". Attending patients already under treatment without the courtesy of a communication to the first attendant; expressing adverse and uncalled-for criticism of treatment previously given; failure to reply to letters, even when courteously referring back a patient who has called for a second opinion: these are some of the things that irritate, while it is painful to record that of seven colleagues with whom I have had intraprofessional dealings in monetary matters, for example, purchase of practice, payment for services as assistant, anaesthetist *et cetera*, three have not shown absolute probity in observing the verbal agreement. Of three general practitioner radiologists to whom patients have been referred for X ray examination, one endeavoured to divert patients to his partner's practice.

The truth of the matter is that the spirit and the ideals of some professions and associations are too broad and too lofty for some narrow and stunted mentalities.

One does not need to read between the lines of the letter written by "Over Forty Years a Member" to realize that he belongs to that delightful and dwindling group of medical men—the professional gentlemen—and I, for my part, would be glad to meet him.

Yours, etc.,

"DISILLUSIONED MEMBER FOR TEN YEARS."

September 11, 1933.

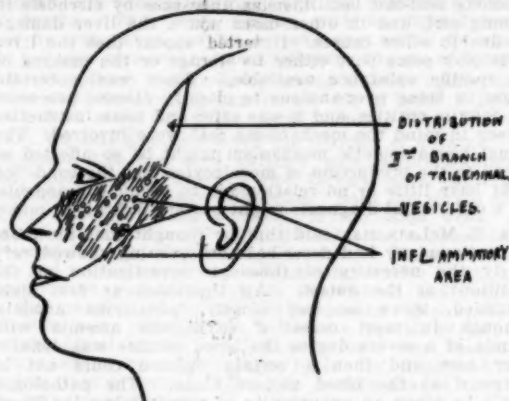
#### AN INQUIRY.

Sir: I wonder if any of your readers could help me with the following case.

The patient is my son, *etatis* four and a half years, and normally is an active, bright, healthy boy. Apart from the condition about to be described, he has had no illness whatever. He is not subject to "colds" or sore throats.

Two days ago he refused to arise from his bed in the morning. He was flushed, temperature 102°, and had no appetite. He was in the same condition yesterday also. He vomited occasionally during these two days. I gave him calomel, half a grain, on the first night of his illness,

and the bowels acted well yesterday. This morning he awoke from a sound sleep as bright as ever, temperature normal, but on the left side of the face, along the distribution of the maxillary division of the trigeminal nerve, there is an area, three inches by one and a half inches, of numerous herpetic vesicles surrounded by an intense flushing of the skin.



Six months ago he suffered from an exactly similar condition, except that the rash was only preceded by one day of malaise.

Since he was twelve months of age he has had seven or eight attacks of the herpetic eruption, all arising in exactly the same position. Only the last two have been preceded by malaise and feverishness—previously the rash would be present on awakening in the morning, with no premonitory symptoms. The area and rash do not itch, but take about three to four weeks to clear up each time. He is now developing slight scarring of the skin on the affected area.

Could anyone suggest a cause for the condition, and any treatment to prevent its recurrence?

Yours, etc.,

H. R. P. BOUCAUT.

Mallala,  
South Australia,  
September 12, 1933.

#### HYOSCINE IN LABOUR.

Sir: The publication in your issue of September 9 of Dr. S. F. Sutherland's interesting and valuable paper on the use of hyoscine in labour prompts me to record my own experiences with this drug. My attention was first drawn to the Van Hoosen technique by an article by Dr. D. R. Jennings (*The British Medical Journal*, November 2, 1929, page 801). A warm commendation of the method by Professor Miles Phillips (*ibidem*, May 16, 1931, page 833) determined me to try it, as I had previously been experimenting with "Avertin" in varying doses and had become very dissatisfied by its unreliability in sub-basal doses.

I have used hyoscine as a routine ever since in all cases attended in hospital, and following the technique outlined by Dr. Sutherland (to whom, I believe, I had the honour of introducing the method) I have found amnesia complete in every case. All infants have cried lustily as soon as born, and maternal morbidity has been nil. An unquestionable objection to the method is the restlessness which it frequently causes, most marked in the "hefty type" mentioned by Dr. Jennings, necessitating expenditure of considerable force to keep the patients in bed at times. This, plus the occasional loud outcry with pains, is to my mind an insuperable objection to the use of hyoscine in domiciliary practice.

Contraindications I have held to be marked albuminuria and the expectation of delivery within half an hour of first seeing the patient in labour.



For the thin, nervous types of women, particularly the *primipara* "scared stiff", I regard the method as ideal. I have recently commenced the modification mentioned by Dr. Sutherland, of giving morphine, one-sixth of a grain, after the conclusion of the third stage, and find this to be a very great improvement. I have never had to administer more than seven doses of hyoscine.

I am now abandoning the use of hyoscine for the hefty *multipara* in favour of a combination of "Nembutal" and chloral hydrate, which, if started early, gives results almost as good as hyoscine as regards amnesia, and does away with the necessity for restraint.

Yours, etc.,

D. MCGOWAN STEELE.

Pyramid Hill,  
Victoria,

September 14, 1933.

#### HYPOGLYCAEMIC ANGINA.

SIR: In your issue of September 2 there appears an article entitled "Hypoglycemic Angina, with a Report of Five Cases", on which I should like to comment.

On page 304 the author states that "the far-reaching effects of constant under-nourishment cannot be over-emphasized, and the ultimate production of myocardial fibrosis is not an unreasonable assumption". On the contrary, it appears most unreasonable. Professor Evans, in his "Recent Advances in Physiology", says most normal persons have a fasting blood sugar level of 0.08%. If a fasting blood sugar of 0.077% can be described as starvation, a debatable assumption, the effect on the cardiac muscle would be atrophy, not fibrosis, except possibly after very prolonged and profound starvation with much loss of tissue.

Cruikshank and Startup (*Journal of Physiology*, Volume LXXII, March 15, 1933, page 365) have studied directly the effect of hypoglycemia on heart muscle. It appears that, given, of course, patent coronary arteries and absence of infection (factors not excluded by Dr. Sippe), the heart carries on quite well with a blood sugar level reduced to 0.05%. If carbohydrate is not available, the heart muscle synthesizes glycogen, and "when available blood sugar is reduced to an almost negligible quantity, the heart still endeavours to maintain an approximately normal oxygen consumption with protein and fat forming the greater part of the fuel". This paper seems to show fairly conclusively that even "with a progressive and marked reduction in the blood sugar, glycogen synthesis is still maintained".

To suggest, therefore, that a slight relative hypoglycemia will produce what prolonged and severe starvation with tissue loss might or might not eventually produce is a very novel proposition and needs more proof than Dr. Sippe has produced.

The obvious explanation of Cases II, III and IV is that they are examples of coronary pathology, but the electrocardiographic changes are too incomplete to establish proof that such slight alterations are "important diagnostic criteria in hypoglycemia and acetoneuria", especially as similar changes occur in coronary sclerosis. Case V was just hysterical.

The author seems to have stretched a few facts on the rack of a fantasy pathology to make them fit a theory; the essence of scientific method is to fit theory to the facts.

Number 4 of the summary takes a solitary, rather casual observation in Case IV, that "symptoms were much worse in hot weather, practically disappearing in the winter", to be sufficient evidence on which to base a conclusion that "there is no doubt that a hot, humid climate is of extreme importance in the production of symptoms". I doubt whether such a definite conclusion is justified by the text of the paper.

Yours, etc.,

J. V. DUNN.

Wickham Terrace,  
Brisbane,

September 15, 1933.

## Analytical Department.

### "AD-SIL."

"AD-SIL", issued by the Commonwealth and Dominion Agencies, Limited, of Day Street, Sydney, is described as a silver and plate polish. It is claimed that this preparation does more than clean and polish, in that it actually deposits a film of silver on articles on which it is applied. The manufacturers claim that the polish contains no corrosive acids, cyanide or mercury.

A sample of this preparation was purchased in the open market and submitted to our analysts, who report as follows:

We have examined the contents of a bottle of "Ad-sil" purchased on the open market and found the approximate composition to be as follows:

Water	62%
Silver nitrate	3%
Abrasive material	26%
Acid tartrates	9%
Mercury	Absent
Cyanides	Absent

Although the preparation is quite acid in character, the acidity is due to organic acids. No free mineral acid is present.

From the results of our examination and practical tests we are of the opinion that the claims, (a) "plates with pure silver as it cleans" and (b) "contains no corrosive acids, cyanide, or mercury", may be accepted as correct.

The preparation suffers from one disadvantage in that there is a tendency for the solid constituents to settle to the bottom of the bottle and to form so dense a sludge that even violent shaking will not redispense it, recourse to the use of a stirrer being necessary. The colour of the bottle may prevent the ordinary user from noticing this sludge, which appears to contain a considerable proportion of the silver.

Medical practitioners will doubtless find the preparation of value to them in the care of their consulting room equipment.

## Proceedings of the Australian Medical Boards.

### NEW SOUTH WALES.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1912 and 1915, of New South Wales, as duly qualified medical practitioners:

Cole, John Basil, L.R.C.P., 1928 (Edinburgh), L.R.C.S., 1928 (Edinburgh), L.R.F.P.S., 1928 (Glasgow), Wilcannia.

Glanville, Ruby Ellen, M.B., B.S., 1905 (London), Rachel Forster Hospital, Redfern.

Temperley, Georgina, M.B., B.S., 1929 (Univ. Melbourne).

Penny, Alfred Gervase, M.B., B.Chir., 1896, D.P.H., 1898 (Cambridge), St. James Flats, Stanley Street, Sydney.

Additional diplomas registered:

Egan, Edward Charles, D.P.H., 1933 (Univ. Sydney).

Mater, Otto Waldemar, D.P.H., 1933 (Univ. Sydney).

## Obituary.

### RUPERT WILLIS.

WE regret to announce the death of Dr. Rupert Willis, which occurred on September 14, 1933, at Malvern, Victoria.

## ROBERT DILLON LEMON.

We regret to announce the death of Dr. Robert Dillon Lemon, which occurred on September 18, 1933, at Melbourne, Victoria.

## Diary for the Month.

- OCT. 3.—New South Wales Branch, B.M.A.: Council.  
 OCT. 4.—Western Australian Branch, B.M.A.: Council.  
 OCT. 4.—Victorian Branch, B.M.A.: Branch.  
 OCT. 5.—South Australian Branch, B.M.A.: Council.  
 OCT. 6.—Queensland Branch, B.M.A.: Branch.  
 OCT. 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.  
 OCT. 13.—Queensland Branch, B.M.A.: Council.  
 OCT. 17.—New South Wales Branch, B.M.A.: Ethics Committee.  
 OCT. 18.—Western Australian Branch, B.M.A.: Branch.  
 OCT. 18.—Victorian Branch, B.M.A.: Clinical Meeting.  
 OCT. 19.—New South Wales Branch, B.M.A.: Clinical Meeting.  
 OCT. 24.—New South Wales Branch, B.M.A.: Medical Politics Committee.  
 OCT. 25.—Victorian Branch, B.M.A.: Council.  
 OCT. 26.—South Australian Branch, B.M.A.: Branch.  
 OCT. 26.—New South Wales Branch, B.M.A.: Branch.  
 OCT. 27.—Queensland Branch, B.M.A.: Council.

## Medical Appointments.

Dr. H. M. Rees (B.M.A.) has been reappointed a Member of the Medical Board of Port Pirie, South Australia, under the provisions of the *Workmen's Compensation Act*, 1932.

Dr. F. W. Cotton has been appointed Medical Officer of Health by the Roebourne Road Board, Western Australia.

Dr. O. Joynt (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane, Mont Park, Victoria, pursuant to the provisions of the *Lunacy Act*, 1928.

Dr. H. W. Wunderly (B.M.A.) has been appointed Temporary Honorary Clinical Assistant to the Tuberculosis Clinic, Adelaide Hospital, South Australia.

Dr. A. R. Adams has been appointed Quarantine Officer, Onslow, Western Australia, under the *Quarantine Act*, 1908-1924, and also District Medical Officer at Onslow, Western Australia.

Dr. V. T. J. Lynch (B.M.A.) has been appointed Quarantine Officer, Gladstone, Queensland, under the *Quarantine Act*, 1908-1924.

Dr. A. J. Melkie (B.M.A.) has been appointed Superintendent of the Parkside Mental Hospital, and also Superintendent of the Hospital for Criminal Mental Defectives, South Australia, under the provisions of the *Mental Defectives Act*, 1913.

## Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xvi and xvii.

- CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.  
 GYMPIE GENERAL HOSPITAL, GYMPIE, QUEENSLAND: Junior Resident Medical Officer.  
 PARRAMATTA DISTRICT HOSPITAL, PARRAMATTA, NEW SOUTH WALES: Junior Resident Medical Officer.  
 PERTH HOSPITAL, PERTH, WESTERN AUSTRALIA: Resident Medical Officers.  
 RENWICK HOSPITAL FOR INFANTS, SYDNEY, NEW SOUTH WALES: Honorary Officers.  
 ROYAL NORTH SHORE HOSPITAL OF SYDNEY, NEW SOUTH WALES: Honorary Clinical Assistant for Ophthalmology.  
 THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Honorary Officers.

## Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
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